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Serving the Appliance and Fabricated Metal Products Industry

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Vol. 18 #1

JANUARY 1961

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TECHNOLOGY DEPARTMENT

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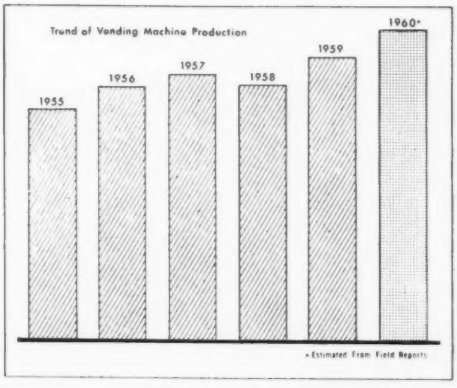

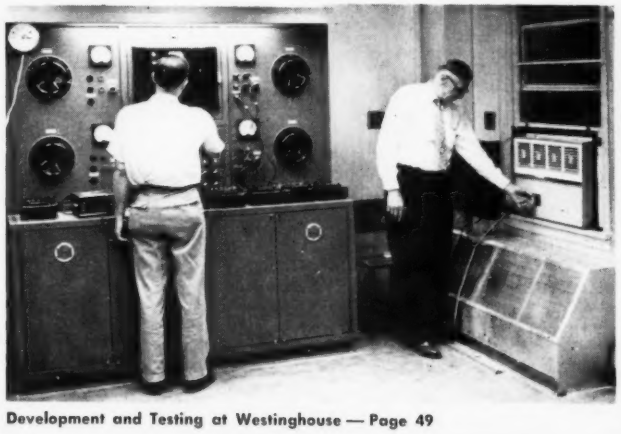

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DON'T FORGET TO TURN THIS PRESS OFF

(otherwise, we'll all be up to our ears in washing machines).

That's a man standing at right center of the photograph. He's not a little fellow either. The machine is 58 feet from left to right, but it's not remarkable for its size alone. It produces a small avalanche of washing machine covers every day. It does the job of a shop full of equipment because it performs all operations automatically. Just push a button and stand back.

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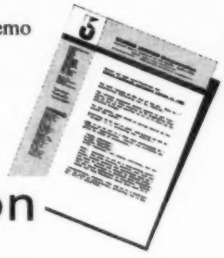

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, sales management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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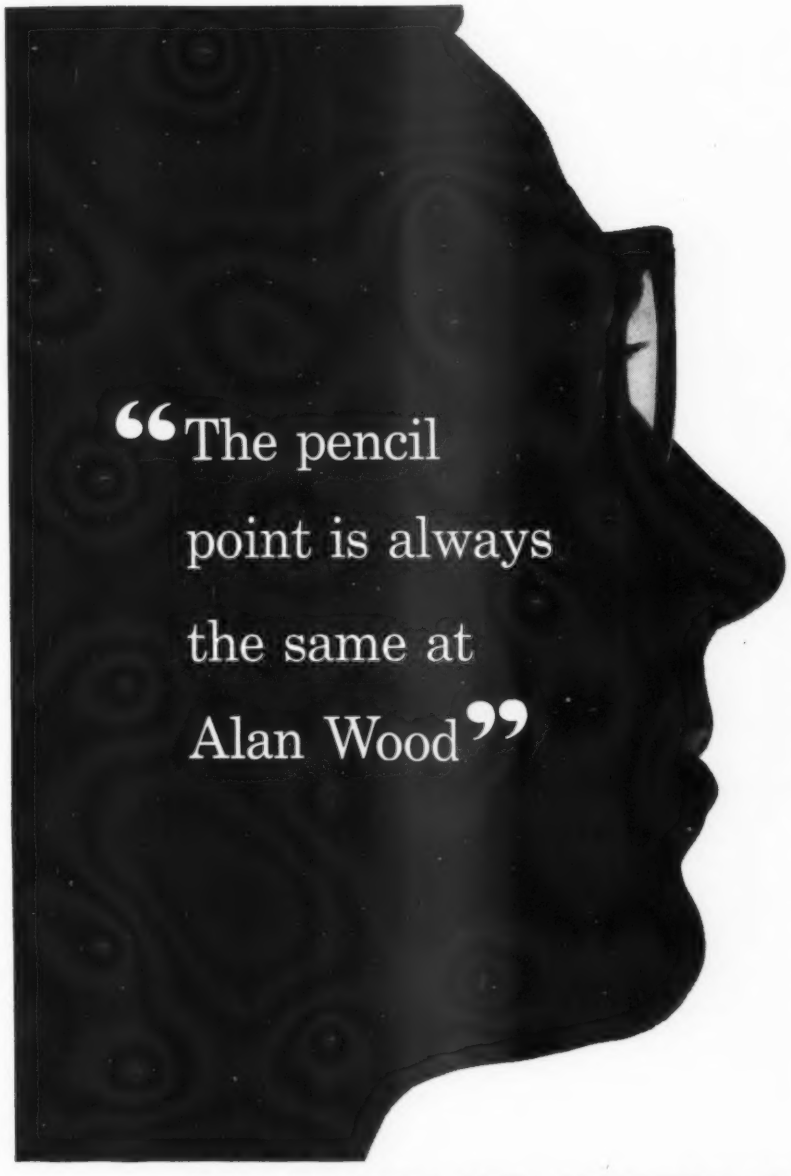

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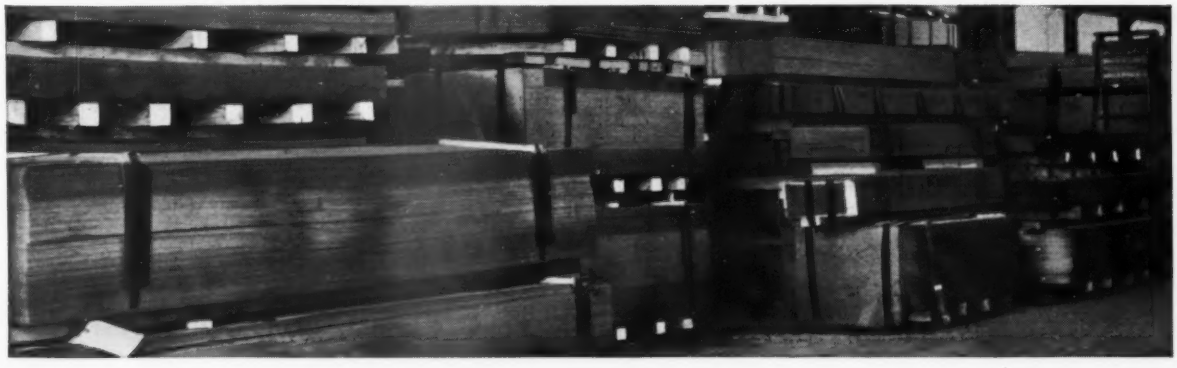


Superior Pre-Paint Protection Racks Up More Sales,

Paint Adhesion of Air Conditioning and Heating Registers, Grilles and Diffusers Insured by Granodine

Precision forming equipment turns coil stock steel into product at Krueger plant.

At major parts producer, Krueger Air Conditioning Corporation, registers, grilles and diffusers are treated with Amchem Granodine before painting to provide them with what Krueger officials agree is a "superior finish that extends the life of our products."

FINISHING PROBLEM SOLVED

Before selecting Granodine as their standard phosphating treatment, Krueger had tried several competitive processes but were unable to sustain the final quality or eliminate rust from painted products. The results—customer complaints and rejects running up to 10 percent of total production.

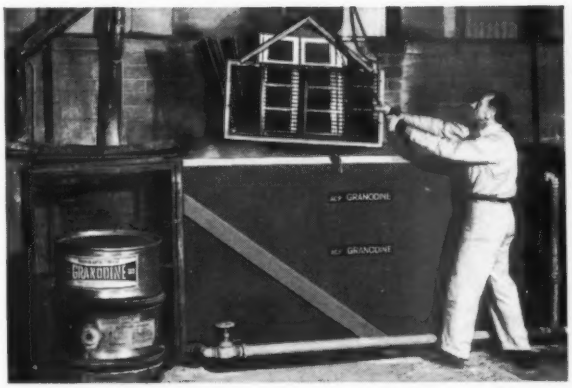
Today, after three years of utilizing Granodine in a five-stage dip phosphating process, Krueger, one of the world's largest manufacturers of registers, grilles and diffusers reports virtually no rejects, increased volume and an all-around better paint finish.

COMPARISONS SELL

To tell their superior finish story Krueger sets up effective side-by-side demonstrations of untreated products and products treated with Granodine at heating trade shows. Customer interest in such displays is high and has led to more sales through

Krueger management-manufacturing team: Left to Right—J. B. Smith, Vice-President of Production; President Leo Krueger; and Ted Kleckner, Vice-President and Comptroller.

# of Amchem GRANODINE*
Fewer Rejects For Krueger



Operator employing electric hoist, lowers load of Krueger products into Granodine dip tank.

Paint line conveyor carries painted Krueger products from water-washer spray booth to inspection area.

graphic illustration of competitive advantages on Krueger's part.

Further support comes to Krueger through the use of Granodine when bidding for and successfully securing Government contracts and projects involving architects where rigid specifications exist for pre-paint finishing.

NEW SYSTEM PLANNED

Looking to the future, Krueger—with a 400 percent increase in sales over the last six years—is currently adding a new 10 acre, 100,000 square foot plant. High on the planning list is a new and virtually completely automated Granodine line. Amchem engineers have designed a unique conveyorized system utilizing overhead cleaning, rinsing and coating of Krueger products which will achieve significant cost savings and substantial reduction in gas consumption through a colder method in the clean-coat phase of the process.

If you are interested in a *superior finish* for steel products—it will pay you to investigate Granodine, the *superior phosphating* process. Your local Amchem Representative can supply the details on how you can quickly and conveniently make the switch to Granodine without interrupting production or re-designing processing facilities, while providing a substantial increase in quality of product finish!

Write for Bulletin 1380B containing detailed information on Granodine for steel . . . the finish that lasts.

*Granodine is Amchem's registered trademark for the conversion coating chemical used to produce phosphate coatings on steel.

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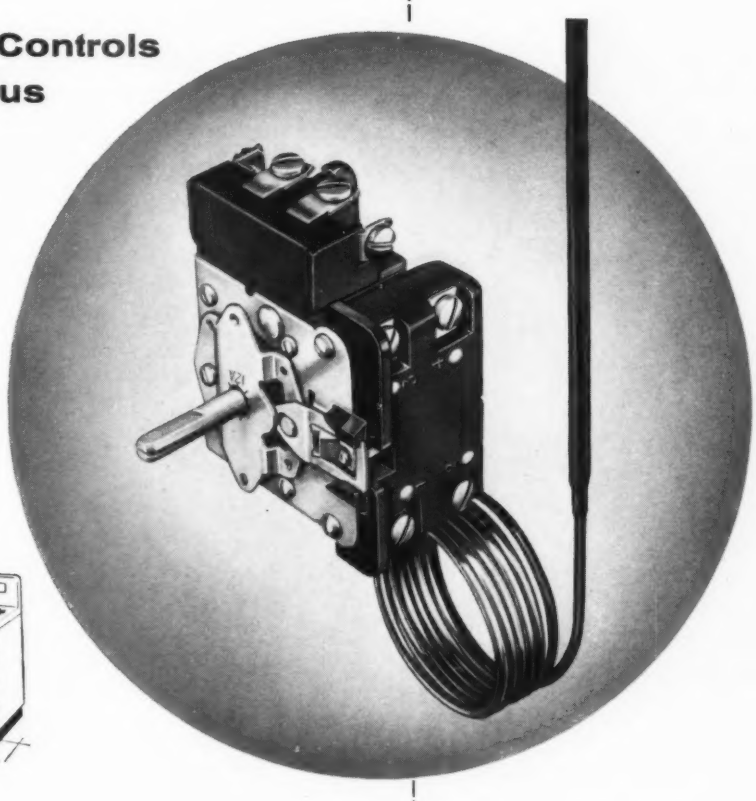

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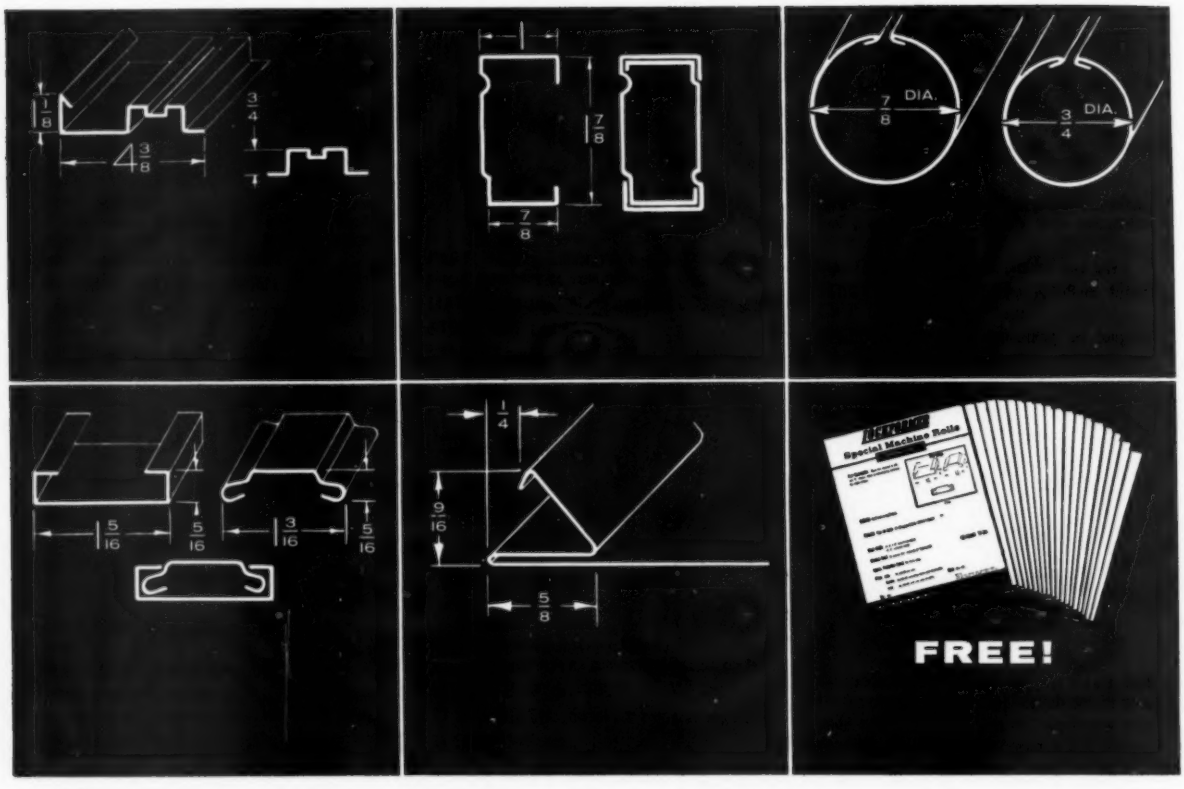

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Appliance pricing in 1960 has been nothing short of ridiculous, and reached a new low. They've taken it out of our hide to a point where there is no hide left, and I foresee a price increase in 1961. — *Judson S. Sayre, chairman of the board and chief executive officer, Norge Div., Borg-Warner Corp.*

But there are other factors that are helpful in achieving lower costs. Every parasitical load on our industry must be watched and every effort made to reduce them or eliminate them. Taxes that retard research, taxes in the form of excise, unnecessary and undesirable or restrictive codes and regulations are just a few examples that require continuing vigilance if we are to achieve low costs.—*R. K. Serfass, manager of Air Conditioning Div., Westinghouse Electric Corp., and president of Air Conditioning and Refrigeration Institute.*

After wood tones, with sandalwood most frequently mentioned, the nation's buyers ranked white, pink, yellow, turquoise, and red as the probable consumer color preferences, in that order. Manufacturers favored white as the probable number one color in 1961, followed by yellow, wood tones, pink, blue and red.—*National Housewares Manufacturers Association.*

There has been much talk of late about the economy and particularly about steel entering a new era in this decade. I subscribe generally to this view, although I believe that this new era has been in the making for some time. Furthermore, I believe there is absolutely no justification for complacency about the future. If we allow ourselves the luxury of complacency, the current crop of pessimists will some day be honored as prophets. So you see, it is not my intention to infer that it will be "business as usual" in the next decade — *John F. Smith, Jr., president, Inland Steel Co.*

The future of aluminum, particularly in the building field, will depend on research, including "hatchet and saw" research in the field. It will be up to industry to perfect the building components. There is the possibility of producing "metal" parts so well in a well-equipped plant that the architect-builder will *want* to use them. —*Fritz Close, vice president and general sales manager, Aluminum Co. of America.*

The basic ingredients which go to make up a successful marketing program are a well-engineered and efficiently-produced product; a solvent company which can afford the money necessary to produce and effectively market a good product; an effective control over the channels of distribution from assembly line to merchant; and an arrangement of territorial assignments which wholesale salesmen can cover efficiently and still earn significant financial rewards. —*Claire G. Ely, marketing vice president, The Maytag Co.*

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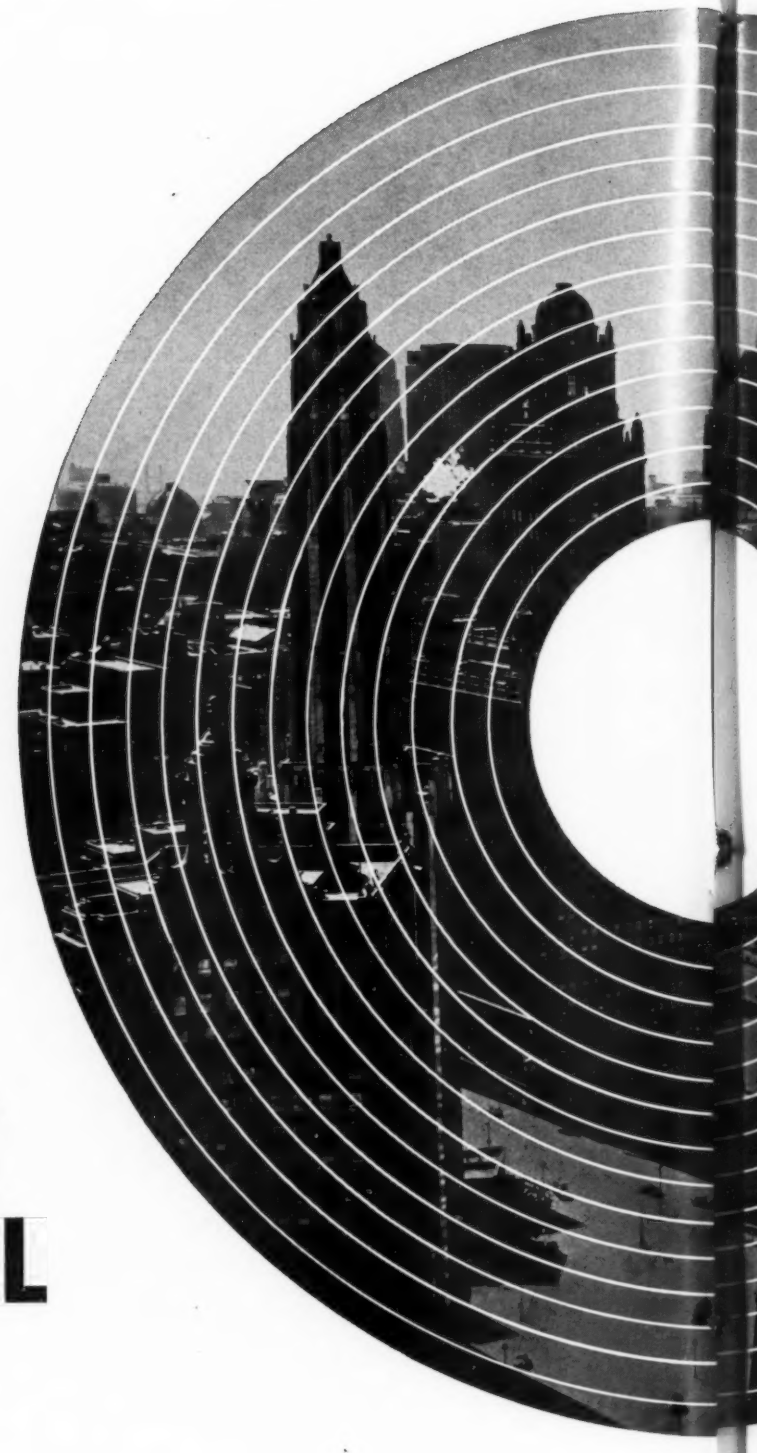

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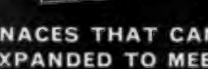
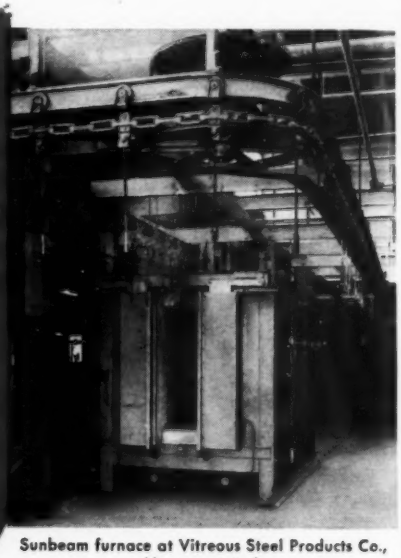


FURNACES THAT CAN BE EXPANDED TO MEET INCREASED PRODUCTION NEEDS

FURNACES THAT CAN BE CONVERTED FROM INTERMITTENT TO CONTINUOUS

Sunbeam furnace at Textile Machine Works, Reading, Pa.



Sunbeam furnace at Vitreous Steel Products Co., Nappanee, Ind.

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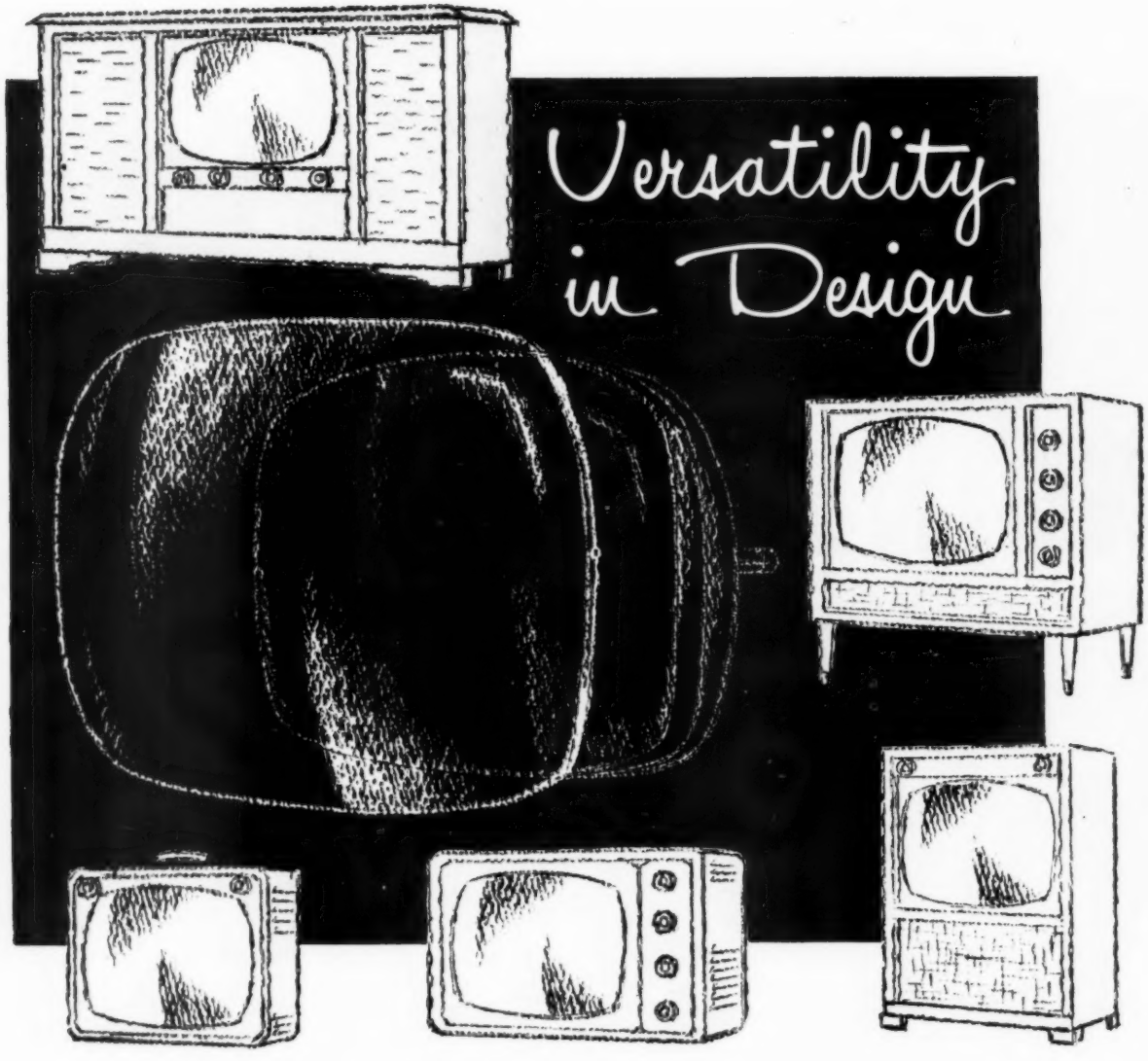

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Wood Screws • Hanger Bolts
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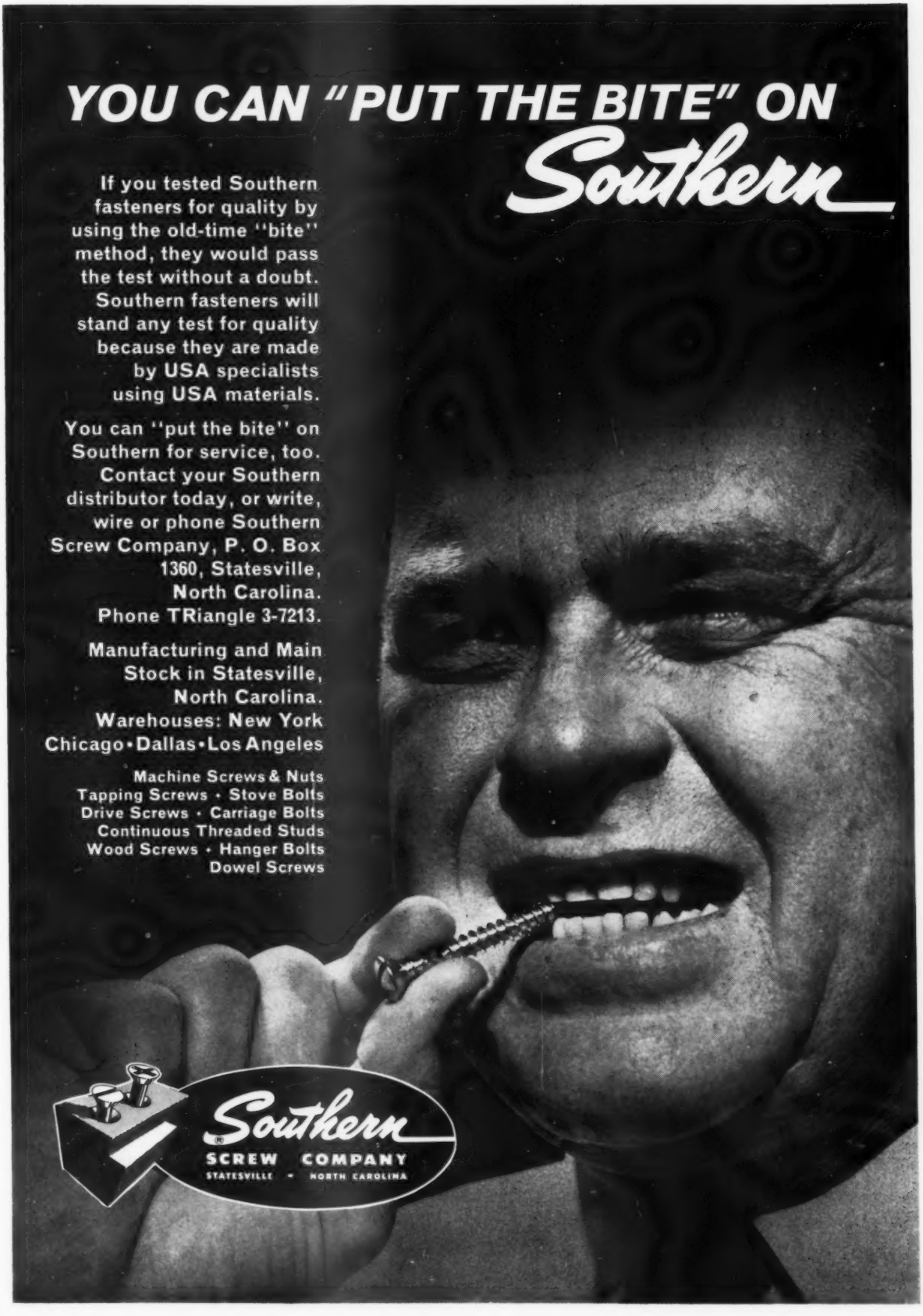
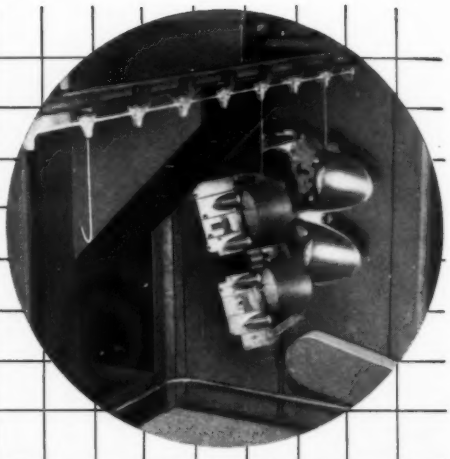




CAPITAL LOSS TURNED INTO PRODUCTION GAIN

from plant ruins to production records in sixty days

One of the toughest rebuilding problems confronting the Clements Mfg. Co. when their Deckerville, Mich., plant was completely demolished by fire, was speedy replacement of the finishing system needed for phosphate coating and painting of its diversified line of automotive diecast and sheetmetal parts.

The new system had to be versatile—had to handle many different sizes and shapes. It had to be inexpensive to operate fuel-wise and labor-wise. Above all, it had to be delivered and installed in a matter of a few days—it had to do a high quality job right from the start—and it had to take up little floor space.

Experienced MOCO design and process engineers rose to the challenge.

First, a 3 stage washing machine for phosphating and rinsing was designed and built at the MOCO plant, and shipped completely finished, except for piping hook-up, directly to the Clements Mfg. Co. plant.

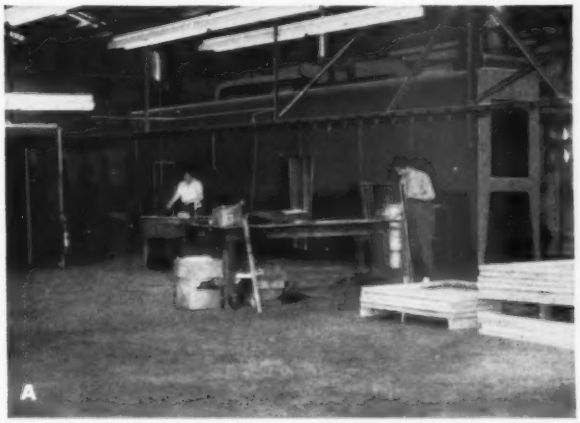
Next, MOCO engineers tackled the drying and paint baking problem. A combination Dry-off and Bake Oven was developed that could dry parts as they came from the washing machine on their way to the spray booths, and bake the painted parts as the conveyor returned them to the oven for a longer period before delivery to the conveyor unloading station.

The Dry-off and Bake Oven was too large to ship already assembled, but MOCO's unitized design made assembly at the Clements Mfg. Co. plant a relatively simple matter.

Within 60 days of the disaster, the Clements Manufacturing Company plant was back in full operation with production at a higher level than ever before, thanks to MOCO ingenuity, engineering skill and desire to serve its customers. MOCO problem-solvers will welcome the opportunity to serve you.

Write for the name of our representative nearest you.

FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications; no cost or obligation, of course.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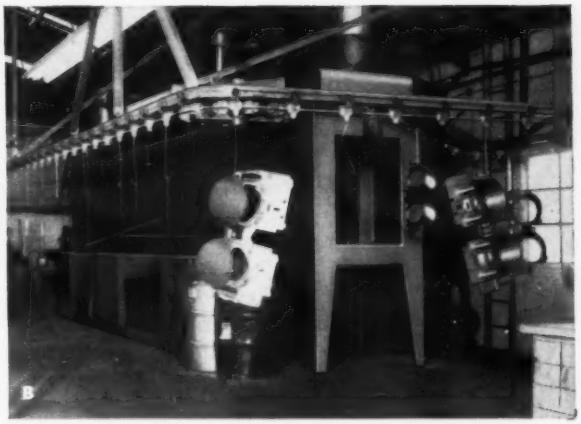
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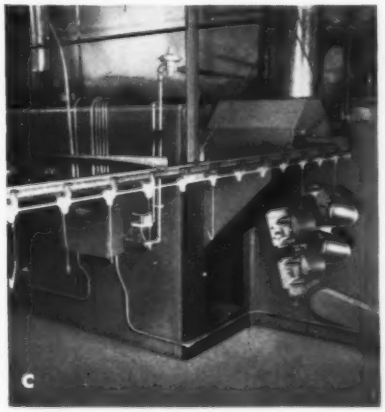
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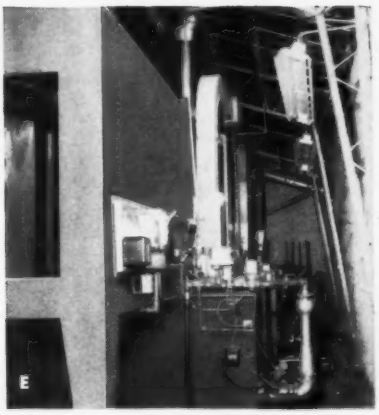
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A—Sixty days after the Clements Mfg. Co. plant was burned to the ground this finishing system was in operation in the rebuilt plant. In the right foreground workers are loading and unloading parts. Behind them is the MOCO Washing Machine. On the left, paint spray booths hide the MOCO combination dry-off and paint baking oven. B—Start of the completely conveyorized finishing cycle. From loading station at left parts enter MOCO 3 stage washing machine for washing, rinsing and phosphate coating. C—Finishing parts coming out of combination dry-off and bake oven on their way to unloading station. D—Entrance view of phosphating machine indicating risers, nozzles, street els, drain decks, access walkways, spray zone silhouettes shown immediately after pump stopped. E—3 stage MOCO washing machine showing tanks, fill and overflow pipes and valves, pumps, burners, controls and exhaust ducts.

MICHIGAN OVEN COMPANY

MOCO

FINISHING EQUIPMENT DEPT. 423 BRAINARD DETROIT 1, MICHIGAN

WASHING MACHINES • BONDERIZING UNITS • DRY-OFF OVENS • DIP TANKS
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60-A

BETTER MORE UNIFORM FINISHES AT LOWER COST

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applied by the **WHIRLCLAD†**
Coating System*

A search for **better quality** coatings uncovers new **fabricating economies.**

Colorful CORVEL vinyl finishes can do **this** for wire racks and other metal parts in dishwashers:

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- *Thorough coverage of edges, corners and projections*
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CORVEL vinyls are applied directly with considerable savings in material costs—and superior uniformity and durability. Rejects are minimized.

Appliance and other manufacturers can get these benefits from CORVEL powders in vinyls, epoxies, nylon, cellulosics, chlorinated polyethers and polyethylene. In addition to supplying coating materials, the WHIRLCLAD Division of Polymer can assist you to engineer the WHIRLCLAD System in your own plant . . . according to your specific requirements. Facilities for sample or prototype development are available.

Custom coated parts are supplied by The Polymer Corporation and other authorized sources.

For further information on CORVEL finishes, write to The Polymer Corp., WHIRLCLAD Division, Reading, Pa.

*The WHIRLCLAD Coating System includes basic procedures and apparatus developed and patented in Germany by Knapsack-Griesheim A.G. of Frankfurt, Germany. The WHIRLCLAD Coating System is protected by patents in the United States and foreign countries, and numerous patent applications are pending. Exclusive patent and licensing rights in the United States and Canada are owned by Polymer Processes, Inc., a subsidiary of The Polymer Corporation.

†Trademark of The Polymer Corporation

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THE FINISH LINE

MPM

THE CASE FOR ELECTRIC HEAT . . . is a strong one, and the rapid growth of this comparatively new division of the home heating industry would indicate a great future. However, there are those in the industry who feel that if the trend is allowed to run along its present course, it may be heading for a definite road block and severe damage to a strong future for the electrical heating industry.

Electric resistance heating, in the form of baseboard units or radiant heating from ceilings and walls, is getting wide acceptance among builders and apparently from utilities, as well. Baseboard heating has a strong appeal to the builder for its ease of installation and modest cost when compared to other acceptable methods of home heating.

There is more to "home comfort" than sealing a home like a refrigerator for economy of operation, and then depending entirely upon resistance heating from the baseboard, or other source, for comfort. While builders and utility people may ignore other requirements for comfort in the home, it is questionable whether the homeowner will continue to do so; therefore some leaders in the electrical heating industry are attempting to point out the important requirements for complete home comfort, in an effort to avoid a road block to progress.

Any competent heating engineer knows that there are factors other than heat itself which are very important to body comfort. Included, of course, are clean, pure air and proper humidity. Lennox, a leading manufacturer of "home comfort," has published an attractive booklet entitled "Fresh Air Electric Heating," in which good house construction, basic types of electric heating, requirements for air circulation, humidity control, "air freshening," temperature control and economy of operation are covered.

John W. Norris, president of Lennox Industries, Inc., spear-headed the company's educational program in a recent talk before heating-refrigeration-air-conditioning engineers by stressing the importance of the central unit type of electric heating system, with forced air circulation through a ducted system. He pointed to the impossibility of correctly "conditioning" air in a home that has been properly insulated, weatherstripped, and oriented for electric heating, unless provision is made for air circulation.

Visualize a foursome of men playing cards in the cardroom, smoking cigarettes or cigars, and their wives (also smoking cigarettes) playing bridge in the livingroom of a modern, well insulated, well built home that has no provision for air circulation, and the problem should be apparent to any reader. As is pointed out in the Lennox booklet, a ducted, electric-heated system can offer humidity control, air freshening and odor control, cleanliness through constant filtering, better temperature control in all parts of all rooms — and — maximum economy of operation.

It is suggested that a percentage of outside air be drawn into any central system, to be controlled as needed, and for those who want the ultimate in air purification, charcoal or an electrostatic type of filter may be incorporated. Some of these filters are claimed to remove up to 90 percent of all the airborne dirt and air pollution.

With a good air-circulating system and modern thermostatic control, it is possible to hold room temperature fluctuation to less than one degree Fahrenheit.

Air conditioning comes next

The purpose of airing this information in the FINISH LINE is to promote discussion among the *manufacturers* of heating and air conditioning equipment. If, as has been indicated, the application of electrical heating through straight radiant applications, without circulation, may eventually tend to kill a market before it is well underway, it would appear that now is the time for manufacturers to make their decisions, irrespective of whether or not the *builder's* choice may be for a non-circulating system.

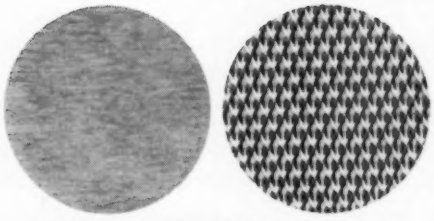
With central air conditioning becoming more and more in demand, the availability of a duct system should, in itself, be an important sales point for the builder who wants to install electric heat, but does not plan to include summer air conditioning.

It would seem that if the electric heating industry wins the battle as to type of equipment, it will have a far better chance of competing successfully with other fuels in the home heating area.

Dana Chase

EDITOR AND PUBLISHER

If you made aluminum crust for apple pie which would be best to use?



PLAIN OR PATTERNED? To help you decide, send for free sample kit of Fairmont embossed pattern sheets now putting new sales appeal into everything from awnings to truck bodies. Fairmont offers truly wide range of alloys, tempers, gauges, finishes. Write Dept. 22-A, Fairmont Aluminum Company, Fairmont, West Virginia.

THE RIGHT ANSWER TO ALUMINUM BUYING PROBLEMS depends upon right materials utilization.

For instance—many an item slated for plain sheet (because this *seems* to be most economical) can really be fabricated on a more practical level with one of Fairmont's embossed patterns. A lighter gauge embossed material provides dimensional stability, increases yield on a cost-per-pound basis, improves product eye-appeal.

MORAL: before final buying decisions are made, consult with a Fairmont field engineer. His mature and varied experience among aluminum fabricators makes him a whiz at application ideas that help you buy profitably. And he's backed by the aluminum source, according to a recent survey, that rates first for fulfilling promises and commitments.

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R. K. Serfass (right), new president of ARI, presents a plaque to retiring president Rudy Berg in recognition of his service to the industry.

ARI reviews past 18 months and charts course for 1961

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

THE AIR-CONDITIONING and Refrigeration Institute's annual meeting was held at The Hollywood Beach Hotel, Hollywood Beach, Fla., November 18-22. The meeting was called to order by ARI retiring president Rudy Berg, vice president, Copeland Refrigeration Corp., Sidney, Ohio, who delivered the president's annual report.

Berg stated, "The Atlantic City meeting last November is a good starting point for this report because it was there that the groundwork which had been laid during the preceding months was brought to fruition. The most important development to report as a result of that November ratification meeting was the adoption of new policies and procedures for the internal strengthening of our organization."

Included in the new policies and procedures are a new budgeting and accounting setup; a change in the annual meeting date from May to late fall; a change in the ARI fiscal year to correspond with the calender year; and a reorganization of the board of directors to provide for representation of all product sections as well as "at-large" directors.

Berg pointed out that ARI's by-laws set up the organization's activities under four broad categories: marketing — which includes public relations; statistics — the collection and dissemination of industry information; the establishment of equipment and product standards and safety codes, including certification programs; and relations with government agencies, trade associations and other interested groups.

P. M. Augenstein, president, Airtemp Div., Chrysler Corp., head of the planning committee.

ARI officers and managing director are (from left): W. H. Aubrey, treasurer; F. J. Kreissl, vice president; R. K. Serfass, president; George S. Jones, Jr., managing director; Rudy Berg, immediate past president of ARI; L. N. Hunter, vice president; and Russell Gray, vice president.

He urged greater participation in and use of statistical programs. He also pointed out that the engineering department has published five new standards, replacing 18 old standards through a policy of consolidation. A number of others are in process of revision in connection with certification programs.

Most important activity

He stated, "A most important activity of the engineering department has been its work with the Electrical Testing Laboratory and participating companies in connection with the unitary air-conditioner certification program. . . . . the program has been widely publicized, particularly in the industry. As an example of the effect of the promotional activities, a survey of dealers across the country during the past summer revealed that at least 80 per cent of them are

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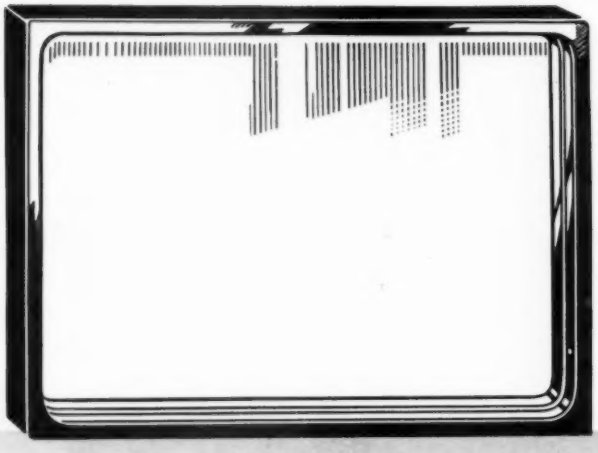

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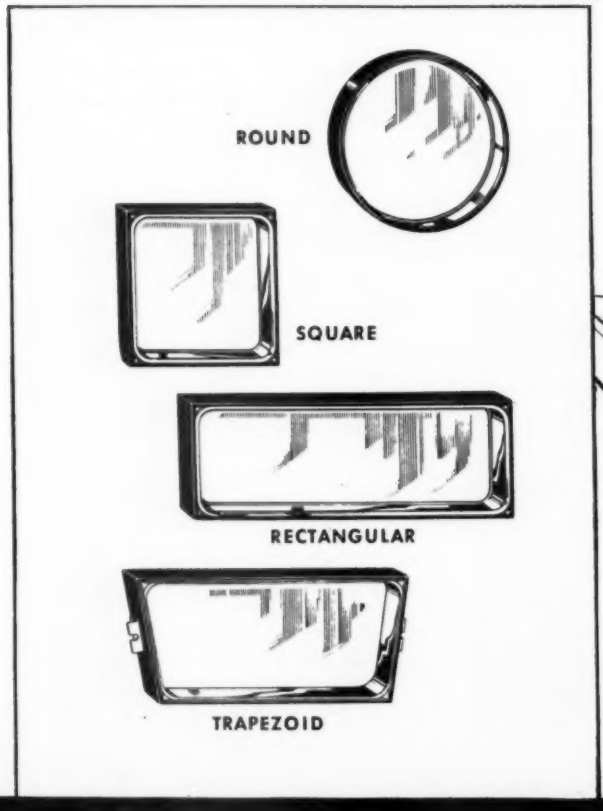
has gained World-Wide ACCEPTANCE



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PERMA-VIEW oven door windows have, for a number of years, been the accepted standard with leading range manufacturers throughout the United States. They have now gained world-wide acceptance. From Canada to Europe—to Australia or South Africa—PERMA-VIEW is recognized as the finest and most economical oven door window.

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Mills Products, Inc. takes pleasure in displaying the ranges of six European manufacturers — all of which incorporate the PERMA-VIEW window. PERMA-VIEW — the accepted standard of the world.

Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and ecomony of adding this sales feature to your new ranges.

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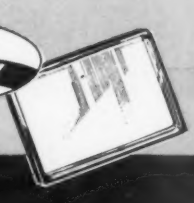

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Abson—a versatile acrylonitrile-butadiene-styrene material—becomes the newest addition to the growing line of quality plastic materials from BFG Chemical.

Abson has superior flow characteristics for molding and extruding—gives high gloss, excellent surface finish, and fine detail to finished products. You can count on its uniform high quality.

Production and application knowledge as well as samples are available. Write Dept. **RE-1**, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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Nema holds first one-day management level annual meeting

AN MPM STAFF REPORT

division and committee reports, election of officers, service awards and symposium on research fill NEMA annual meeting

THE NATIONAL ELECTRICAL Manufacturers Association held its 34th annual meeting at the Savoy-Hilton Hotel, New York City on November 17th. It was the first time NEMA has held the annual function as a one day management-level-only meeting.

Consumer products division

H. L. Travis, vice president-sales, Kelvinator Div., American Motors Corp., and chairman of the Consumer Products Div., presented a report on the division's progress. He stressed that "The board is a working group. All of our members have the authority to act — and they do." He then reviewed some of the more important accomplishments:

"We have revised the NEMA standard for computing the food-storage volume and shelf area of refrigerators. This should end a great deal of confusion. From now on, we'll talk strickly in terms of *net* volume — nothing else.

"In the the past, each section ran its own promotion or advertising program with its own agency. There was lack of coordination and duplication of costs. Now the division has selected one agency for coordinated promotion work.

"Our statistics are going to be more useful. We will employ outside consultants to arrive at a formula for improving and verifying the statistical committee's forecasting — and to establish an industry base.

"We have suggested to the room air conditioner section that it develop a certification program. This is progressing rapidly.

"We have set up a special tax committee which will formulate policy on federal, state, and local tax matters. It will interpret government rulings and follow their execution.

"We have organized a parts and service committee of experts in this field. The committee will work to improve the service problem with an eye to offsetting unfavorable publicity in this area.

"We have endorsed the Recommended Advertising Practices of the Ameri-

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N. J. MacDonald (center), president of Thomas and Betts Co., Elizabeth, N. J., and immediate past president of NEMA, presented 50-year Awards to Fred F. Loock (left), president of Allen-Bradley Co., Milwaukee, Wis., and A. M. Callanan, director and consultant of Walker Bros., Conshohocken, Pa.

(Below) — NEMA division chairmen are (from left): *Wire and Cable*, Vernon W. Heimberger, manager electrical sales, American Steel and Wire Div., U. S. Steel Corp.; *Industrial Electronics and Communications Equipment*, Gordon L. Nord, vice president, Schauer Mfg. Corp.; *Insulating Materials*, E. R. Perry, president, National Vulcanized Fibre Co.; *Industrial Equipment*, E. E. Helm, president, The Reliance Electric and Engineering Co.; *General, Transmission and Distribution Equipment*, C. H. Bartlett, vice president and deputy general manager, East Pittsburgh Div., Westinghouse Electric Corp.; *Building Equipment*, Frank H. Roby, executive vice president, Federal Pacific Electric Co.; *Consumer Products*, H. L. Travis, vice president, sales, Kelvinator Div., American Motors Corp.; and *Lighting Equipment*, Clarence C. Keller, executive vice president, Holophane Co., Inc.

Metalwash® AUTOMATIC
SPRAY PICKLING MACHINES

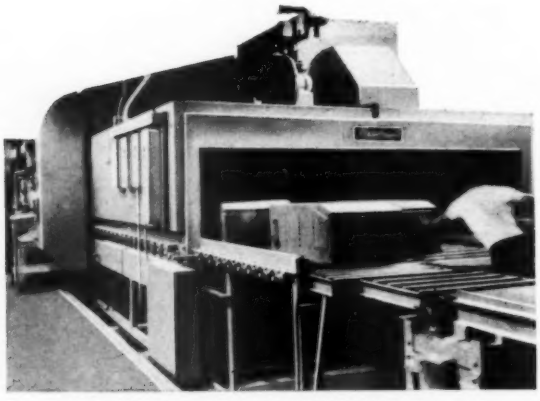
CLEAN AND PICKLE METAL BETTER, FASTER, ECONOMICALLY!

Continuous spray pickling, pioneered by METALWASH and proved in many of America's leading manufacturing plants, is an **essential** production method for economical and superior preparation of metal for porcelain enameling.

METALWASH conveyorized spray pickling does the job automatically from start to finish—scouring the ware clean of dirt and oxide scale, and performing each step of the pickling process by action of high-pressure sprays which blast the work from every angle.

METALWASH spray pickling does away with the old dip-tank method. Its **automatic** action reduces manpower needs, speeds the job, protects workmen from acids, alkalis and fumes and reduces rejects to a minimum.

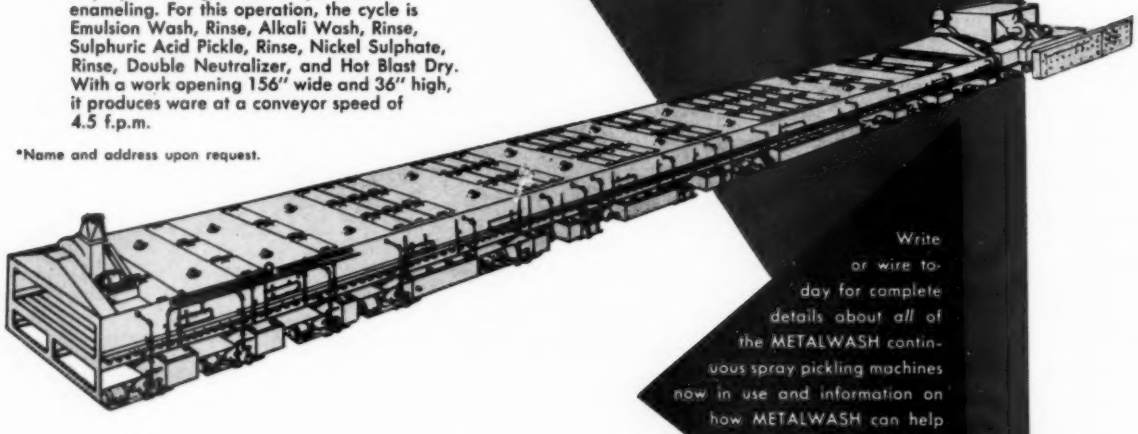
The resulting uniformly-superior surface for application of enamel is obtainable by no other process.



This driven-roller type METALWASH spray pickling machine is used by one of America's largest appliance manufacturers* to prepare refrigerators for porcelain enameling. For this operation, the cycle is Emulsion Wash, Rinse, Alkali Wash, Rinse, Sulphuric Acid Pickle, Rinse, Nickel Sulphate, Rinse, Double Neutralizer, and Hot Blast Dry. With a work opening 156" wide and 36" high, it produces ware at a conveyor speed of 4.5 f.p.m.

*Name and address upon request.

Largest in the world, the 208-ft. METALWASH spray pickling machine shown below was engineered and built for specific application. METALWASH engineers design and build spray picklers in all sizes, of course, and their experience is available to you for production of a machine of any size that will meet your requirements.



Write or wire today for complete details about *all* of the METALWASH continuous spray pickling machines now in use and information on how METALWASH can help you to make a better product at lower cost.

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Established 1926

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Washers Dryers Phosphatizers Bake Ovens Degreasers

APPLIANCE FORECASTS FOR 1961

AHLMA-GAMA-NAMA-NEMA

opinions from individual end product manufacturers

AN ANNUAL MPM SERVICE FEATURE

The outlook for the gas appliance industry

by Edward R. Martin • DIRECTOR, MARKETING AND STATISTICS, GAS APPLIANCE MANUFACTURERS ASSOCIATION

a report based on GAMA's 1961 "General Business Outlook"

SALES OF ALL MAJOR GAS appliances and equipment combined in 1960 were off by over 11 percent when compared with the preceding year. This result reflected a decline in residential construction, a slowdown in retail sales, and a dropoff in gross national product during the third quarter.

As a review, GAMA research showed that manufacturers felt in December, 1959 that 1960 sales would increase by only a fraction of one percent. This thinking was altered by June, 1960 to show that total volumes would fall to 5.6 percent below '59 levels. Final overall estimate for gas appliances for the year indicates that sales will be 11.5 percent below the levels of the previous year.

In June, 1960, the manufacturers looked for 1961 sales to be increased by 5.1 percent. This judgment has been later modified to the present forecast of 2.3 percent.

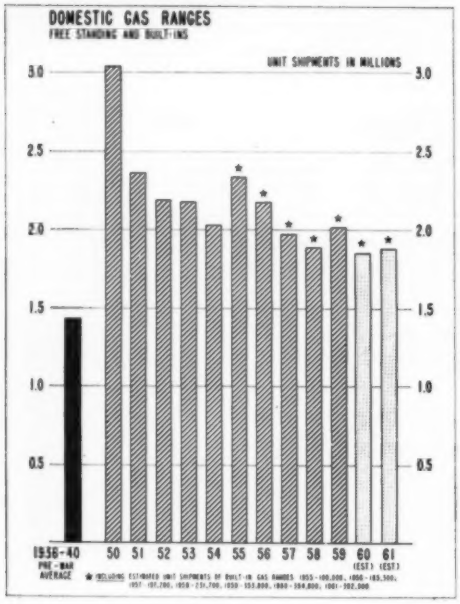
In GAMA's "General Business Outlook" for 1959, reference was made to the possibility of a "moderate recession," and it was further suggested that the 60's would be typified by "relatively substantial and progressive increases" in consumer demand, rather than by

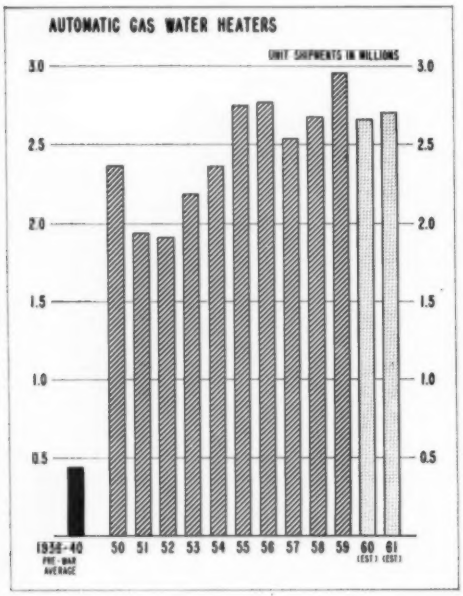
ANTICIPATED 1961 INDUSTRY UNIT SALES

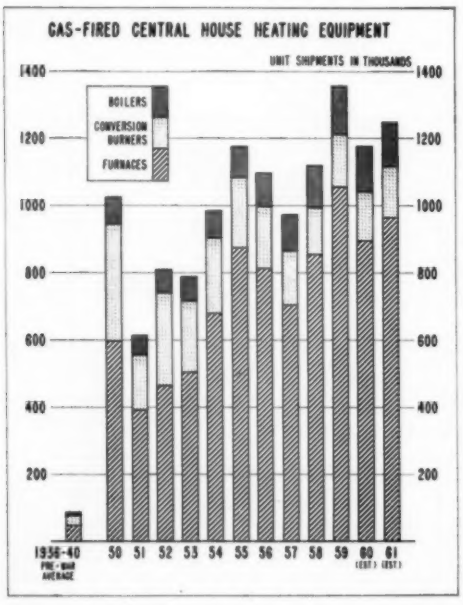
	SALES, IN UNITS			Anticipated % Change as of June, 1960
	1961 (Consensus)	1960 (Estimated*)	Percent Change	
Domestic Gas Ranges				
Free Standing	1,483,600	1,489,300	– 0.4	– 1.0
Built-Ins (oven-broiler units)	392,900	354,800	+10.7	+14.9
Total	1,876,500	1,844,100	+ 1.8	+ 2.1
Automatic Gas Water Heaters	2,702,300	2,662,400	+ 1.5	+ 8.2
Gas Central Heating Equipment				
Warm-Air Furnaces	964,000	897,100	+ 7.5	+ 6.5
Boilers	149,600	143,200	+ 4.5	+ 4.8
Conversion Burners	134,200	134,700	– 0.4	+ 1.7
Total	1,247,800	1,175,000	+ 6.2	+ 5.7
Gas Vented Recessed Wall Heaters	365,800	369,600	– 1.0	+ 6.4
Gas Floor Furnaces	81,800	86,000	– 4.9	– 3.0
Gas Direct Heating Equipment	1,219,600	1,192,200	+ 2.3	+ 3.1
Gas Incinerators	46,400	42,500	+ 9.2	+ 8.5
Gas Unit Heaters	143,300	140,400	+ 2.1	– 0.3
Gas Duct Furnaces	28,900	26,200	+10.3	+ 4.6

* Ten months actual, two months estimated.

Not included in the foregoing table are gas clothes dryers and commercial gas ranges which, based upon a limited number of replies, are expected to increase 10.5% and 2.9%, respectively.







spectacular and sudden sales increases.

Compared with housing starts as a barometer, the gas appliance industry has not fared too badly. Based on current data, comparing 1960 and 1959 volumes, we see that: housing starts are estimated to be down 15.8 percent in 1960; gas range sales for the year will be down 8.3 percent; electric range sales for the first ten months are down 8.3 percent; gas water heater sales for the year will be down 9.9 percent; electric water heater sales for the first ten months are down 19.9 percent; gas central househeating sales for the year will be down 13.4 percent; and oil central househeating sales for the first ten months are down 13.4 percent.

As a further comparison, GAMA points out that in the areas of major household appliance or equipment sales, such as ranges, water heaters, central heating equipment and clothes dryers, the gas "share of the market" was increased during 1960.

During the coming year

The current year, when compared with 1960, is expected to show increases in the following gas appliances and equipment categories: built-in gas ranges, automatic gas water heaters, gas warm-air furnaces, gas boilers, gas direct heating equipment, gas incinerators, gas unit heaters, and gas duct furnaces.

Domestic gas ranges

The manufacturers of domestic gas ranges expect total industry sales volume to approximate 1,876,500 units during 1961, representing an increase of 1.8 percent over 1960 volume. "Built-in" gas range sales are expected to reach a total of 392,900 units or 10.7 percent more than were sold during the preceding year. "Free-standing" range sales are expected to decrease 0.4 percent from 1960 levels and total 1,483,600 units.

Free-Standing Ranges — Of the 21 manufacturers submitting their estimates, 13 expect their own sales volumes to exceed the volumes of 1960. Six manufacturers anticipate lesser volumes, and two expect no change.

Built-In Gas Ranges — Of the 20 participating manufacturers submitting their estimates, 17 expect their own sales volumes to exceed the volumes of 1960; one manufacturer expects lesser volumes; and two did not provide an estimate.

Automatic gas water heaters

Manufacturers of automatic gas water heaters expect total industry sales volumes to approximate 2,702,300 units during the current year, an increase of 1.5 percent over 1960 volumes.

Of the 27 manufacturers submitting their estimates, 23 expect their own volumes to exceed the volumes of 1960, three look for a decline, and one expects no change.

Central heating equipment

Manufacturers of gas-fired central heating equipment, combining warm-air furnaces, boilers and conversion burners, expect total industry sales volumes to approximate 1,247,800 units during the current year, an increase of 6.2 percent over last year.

Warm-air furnace manufacturers look for increased volumes during 1961. The consensus: sales of 964,000 units, or 7.5 percent greater than during the previous year.

Gas boiler manufacturers also look for increased volumes during 1961, with sales totaling 149,600 units, an increase of 4.5 percent over 1960 volumes.

Gas conversion burner manufacturers expect industry sales to decrease by 0.4 percent from 1960 volumes and approximate 134,200 units.

An analysis of individual company anticipated volumes indicates warm-air furnace sales could increase as much as 14.6 percent to 1,028,100 units; gas boiler sales could total 153,900 units, and exceed 1960 volumes by 7.5 percent; and gas conversion burner sales could also rise 0.9 percent to 135,900 units.

Direct heating equipment

Manufacturers of direct heating equipment, including unit heaters and duct furnaces, expect this year's sales to increase 2.3 percent from 1960, and to approximate 1,219,600 units. An analysis of the reports indicates that sales of gas-fired direct heating equipment could total 1,235,100 units.

Gas-fired unit heater manufacturers look for increased volumes. The consensus: sales of 143,300 units, or 2.1 percent greater than in 1960. Eleven of the 15 responding manufacturers anticipate their own companies' sales will increase, while three expect their sales to remain the same, and one did not provide an estimate.

Gas-fired duct furnace manufacturers anticipate sales increases for 1961, with industry volumes totaling 28,900 units, or 10.3 percent above the volumes of 1960. Six of 11 responding companies look for an increase in their 1961 sales, four expect their sales to remain unchanged, and one company did not provide an estimate.

Other heating appliances and incinerators

Manufacturers of *gas-fired vented recessed wall heaters* expect total industry sales volumes to approximate 365,800 units during the current year, which would represent a decrease of 1.0 percent. *Gas floor furnace* sales are expected to decrease 4.9 percent from 1960 levels, to approximate 81,800 units. *Gas-fired incinerators* are expected to show an increase of 9.2 percent from 1960 sales, to approximate 46,400 units.

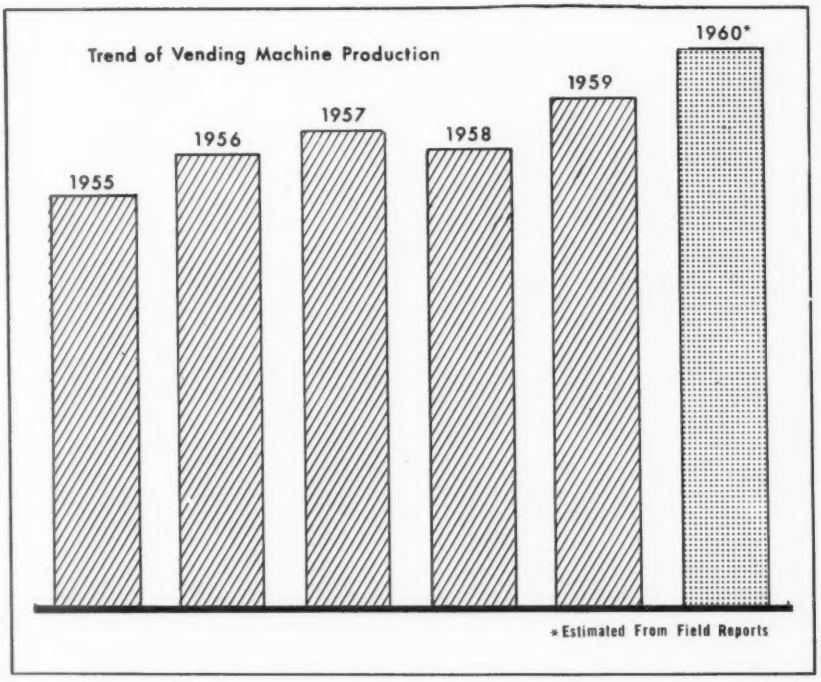
A 1960 "revolution" leads the way

AN MPM STAFF REPORT

SEVEN YEARS AGO, when the MPM management decided to penetrate the automatic merchandising equipment industry (vending machines) at the manufacturer level, it was for two specific reasons. First of all, there was no publication specifically devoted to the interests of this comparatively small manufacturing group and, second, it was felt that the field of automatic merchandising was at a point where rapid progress might be expected.

MPM started turning the spotlight on automatic merchandising with emphasis on the original equipment manufacturer and, for the last three years, has devoted a complete section in one monthly issue to this growing industry.

No statistical forecast will be presented in this report, but yearly through a brief review of progress, including details of a mild "revolution" during 1960, plus comments resulting from an interview with National Automatic Merchandising Association President Thomas B. Donahue, we will present a background for further developments and progress.



A $2 billion industry

It has been customary in the automatic merchandising industry to measure progress in terms of the value of vended products. As has been true in the past, the backbone of the vending industry in 1960 is represented by some 4,000 to 5,000 operating companies, the majority of which are small or medium in size. The fact that in 1960 most of the retail volume of over $2 billion was still in a few traditional lines such as cigarettes, soft drinks, candy, etc., has not been a deterrent in keeping vending equipment manufacturers from developing advanced equipment for "food services" and a variety of other applications.

During the past year, there were a number of important mergers both at the distributor level and among the equipment manufacturers themselves. Almost overnight vending became one of the favorites of the investment counsellors, gaining new recognition among financial people and with the public.

Major developments last year

The National Automatic Merchandising Association lists nine 1960 developments underlying "belated public recognition" of vending's post-war growth:

1. The emergence of several national and regional operating companies through a continuing series of mergers during the year.
2. Consolidations of existing machine manufacturers, primarily to obtain rapidly a diversified or "full line" of machines in a highly competitive market.
3. The acquisition of vending machine manufacturers by companies outside the industry.
4. The issuance of securities by operating and manufacturing companies to the public.
5. The increasing expansion of vending into "automatic" food services in plants, offices, colleges, hospitals, and many similar institutional outlets.
6. The availability of currency changers and the first public experiments coupling them to merchandise and ticket venders.
7. The entry of vending companies into the catering field and vice versa.
8. The advent of truly remarkable machines, such as iced soft drink venders, the single-cup-brewing coffee vender, the multi-purpose flexible general merchandise vender and the new models of hot food dispensers first shown at the 1960 NAMA Exhibit.
9. The growing emphasis on uniform machine design, allowing arrangement in modular "banks" and general enhancement of vending "areas." (In some cases this is leading to inclusion of vending architects' blueprints for new structures.)

More financial stability — equipment research

When questioned concerning the future for automatic merchandising equipment, Donahue had this to say: "Automatic merchandising has seen so many different breakthroughs in the last few years, and especially in 1960, that the temptation is great to predict almost anything for the years to come.

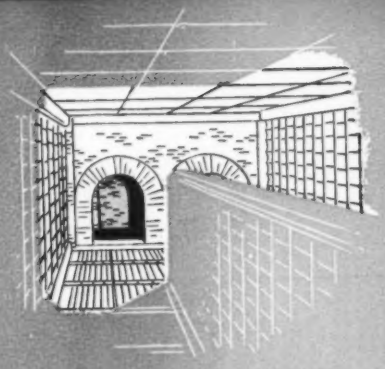
"However, it is well to point out that for those of us in the industry, the biggest challenge and future lie in further expanding along the lines already established for the vending industry.

"The potential, for instance, in automatic food services for workers in factories, for school children and for people at work as well as at play, is so great that we have really only reached the beginnings in this field. Business and industry continue to call on our services along these lines and we have much work to do yet to render services and develop equipment to satisfy these needs.

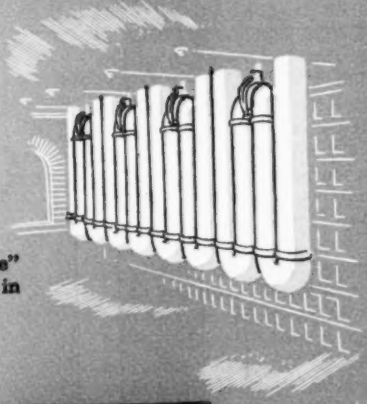
"Nevertheless, there are even greater potentials ahead for automatic merchandising through the development of such unusual devices as the automatic bill changing machines. Their service lies in the ability to make change and thus encourage more sales through conventional machines. However, we in the industry foresee the real significance of bill changers in applications where they will be an integral part of a merchandising device, such as for the sale of soft goods, tickets and a host of other such devices.

"One thing is certain: the executives who manage automatic vending companies today have already proven that their enthusiasm, imagination and know-how can clear new paths. This alone predicts further progress in the future.

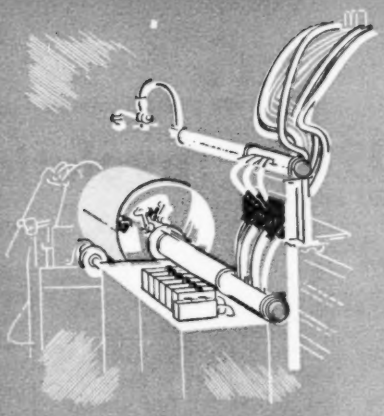
"With the trend toward mergers and financial strength, plus increased equipment research, the progress ahead is assured, even if the directions it will take are not yet clearly defined."



FIRST "U-Type" Continuous Furnace built in 1927, for Enamel Products Co.
...by Ferro

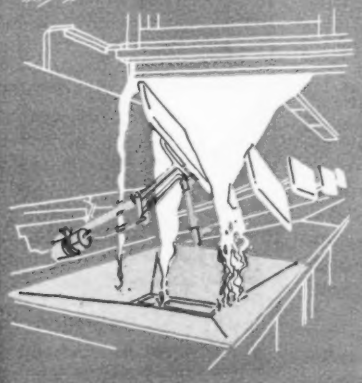


FIRST "Radiant-Tube" Continuous Furnace built in 1937, for Newark Stove Co.
...by Ferro

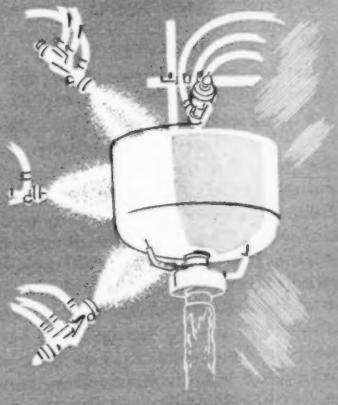


FIRST Fully-automatic Spray Equipment for water heaters built in 1955, for Rheem Mfg. Co.
...by Ferro

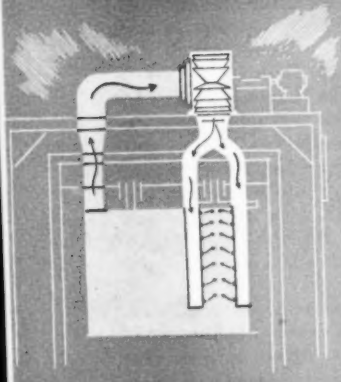
For ENGINEERING PROGRESS ...look to FERRO



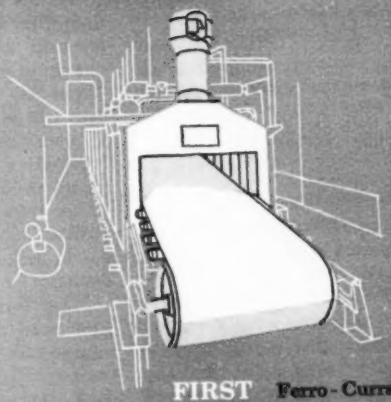
FIRST Fully-automatic Flow Coat Machine built in 1955, for General Electric Co.
...by Ferro



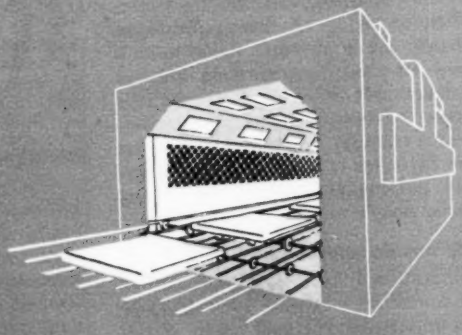
FIRST Fully-automatic Spray Equipment for washing machine tubs built in 1956, for Maytag Co.
...by Ferro



FIRST Porcelain Enameling Furnace with convected preheat air-current system built in 1956, for Porcelain Steel Corporation
...by Ferro



FIRST Ferro-Curran Automatic Spray Pickling Machine built in 1958, for American Radiator & Standard Sanitary Corporation
...by Ferro



FIRST Gas-Fired Infra-red Porcelain Enamel Drying Oven built in 1959, for Murray Manufacturing Co.
...by Ferro

"Engineered-to-the-job" furnaces cut porcelain enameling costs for TEMCO

Because production requirements vary widely from plant to plant, no one type of enameling installation can produce best results for all.

That's why Ferro builds furnaces of many types — and why Ferro "engineered-to-the-job" furnaces assure lowest possible enameling costs for the specific application.

Here, for instance, at the Precision Engineering Company (Division of TEMCO Corp.), Nashville, Tenn., is Ferro's 1960 model of a straight-through, slot-in-roof box furnace with doors at each end. Extremely flexible in operation, it is a typical example of a furnace engineered to meet the customer's requirements.

SOME OF ITS FEATURES:

- Lightweight alloy radiant tubes
- Spark plug burner ignition
- Revolutionary spin-type burners regulating top-to-bottom tube temperatures
- Sliding doors and monorail conveyor automatically timed
- Economical in cost

Whether your need is for a new furnace, a new plant, or simply modernization of present facilities, Ferro Engineering Division can handle the job completely to help you attain maximum efficiency, economically. Call or write.

FERRO

FERRO CORPORATION

Engineering Division

4150 EAST 56th STREET • CLEVELAND 5, OHIO

Home laundry appliance manufacturers expect modest increase in 1961

FACTORY SALES OF HOME LAUNDRY equipment hit an alltime high in 1956, dropped sharply in 1957, wavered additionally in 1958, and then recovered to the third best year in history in 1959. It is estimated that closing figures for 1960 will show approximately a 13 percent drop from the '59 level.

Conservative optimism

The leading home laundry manufacturers have forecast 1961 sales of 4,868,000 units of automatic and wringer washers, combination washer-dryers, and gas and electric clothes dryers. This figure represents the median of all forecasts made by industry market research department heads to the American Home Laundry Manufacturers' Association. This figure would represent the equivalent of a four-percent increase in factory sales of home laundry equipment in 1961, when compared with the association's estimate of 4,682,000 units for 1960 as of midnight, December 31, 1960.

The manufacturers are very conservative in their estimates on an increase for automatic washers, with a median figure of three-percent increase presented for the year.

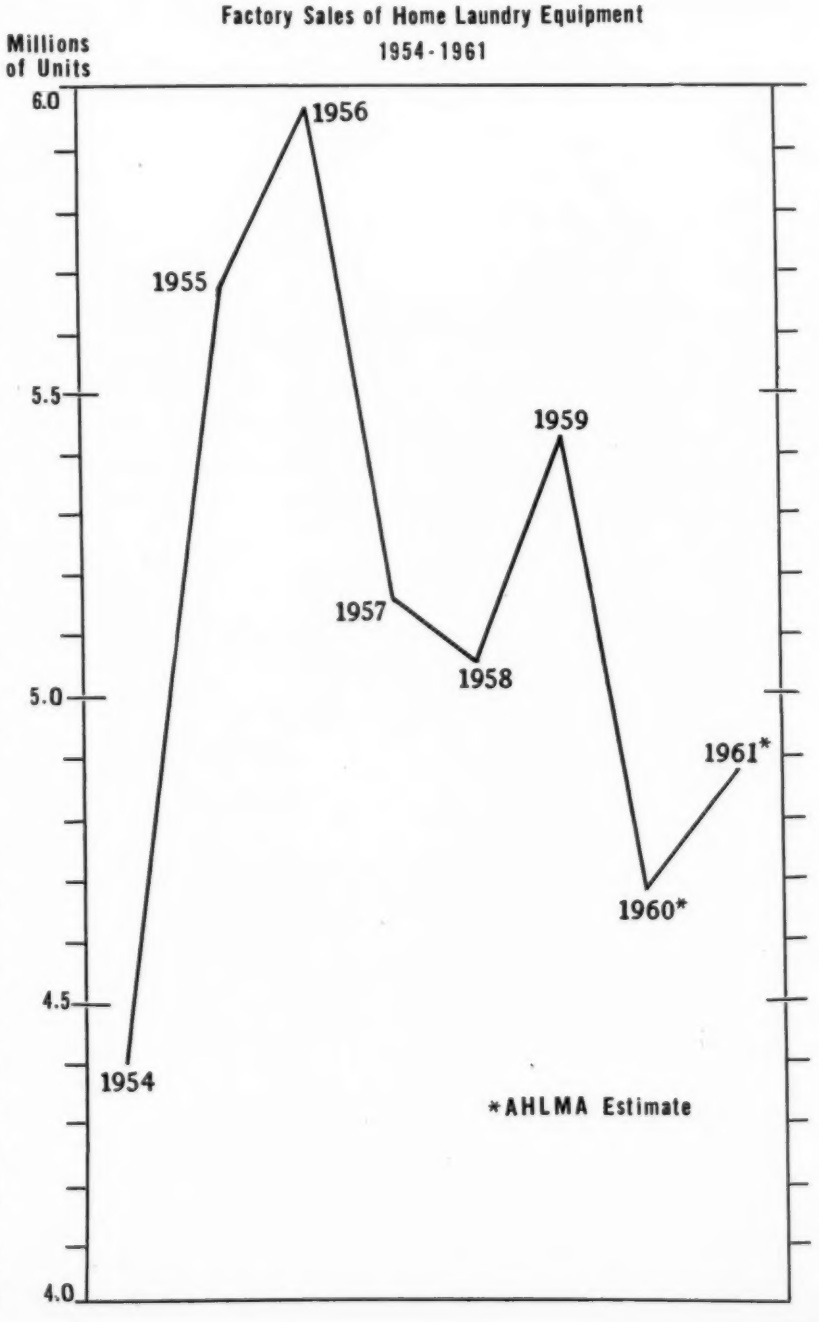
The volume of gas dryers trails that of electric dryers by a wide margin, but percentage-wise, forecasters show a nine-percent increase for the gas units, compared with a five-percent increase for electric.

Automatics take over

Since 1948, wringer washer sales have steadily declined as automatic washers continued to take over an increasingly larger share of the market. It may therefore be a surprise to see that the industry forecast shows a reduction of only one percent for wringer washers from the figure of 715,000 established for 1960.

The combination washer-dryer has been an extremely slow starter in the family of home laundry appliances, but the consensus of opinion among the manufacturers is that during 1961 the combos will take a decided spurt ahead with a projected 23 percent gain over last year.

Guenther Baumgart, president, American Home Laundry Manufacturers' Association, cites three factors as most favorable to the home laundry appliance industry during the coming 12 months: low saturation of dryers and combination washer-dryers, the rapidly growing automatic washer replacement market, and an expected upturn in home building.



Electrical appliances in 1961

The meeting of the National Electrical Manufacturers Association Consumer Products Division Board of Directors was not held until late December, so the formal year-end statement and forecast by A. J. Nesti, chief statistician, usually presented in this section of January MPM, could not be obtained to meet closing date for the last forms of this issue.

However, through the cooperation of the NEMA board, the most important section of the annual forecast statement — the estimated final unit sales figures for 1960 and the official forecast figures for 1961 — were obtained by MPM editors, and are presented on this page in table form. These are the official NEMA Consumer Products Division estimates as approved by the division board.

The large-volume items in the major electric appliance group are forecast to change little from 1960 estimated final figures. For example, forecast figures for free-standing ranges are identical to those for 1960. Slight gains are indicated for other products, ranging from a one percent gain for refrigerators through a five percent gain for freezers, to an 11 percent plus increase for built-in ranges. (The unit gain for freezers is predominately in favor of upright over chest-type models.)

The only sales reduction anticipated is a slight loss in sales of water heaters, figured at slightly over two percent.

Worthwhile gains are indicated for three of the lower saturation point items, ranging from a 7.8 percent plus gain for food waste disposers, a 12.6 percent increase for automatic dishwashers, and a 15.8 percent gain for dehumidifiers. (The unit gain for automatic dishwashers is slightly in favor of "all other" dishwashers over "portables.")

(More forecasts on page 57)

MAJOR ELECTRICAL APPLIANCES

ESTIMATES OF MANUFACTURERS' TOTAL INDUSTRY UNIT SALES INCLUDING SALES FOR EXPORT

	ACTUAL YEAR 1959	YEAR 1960 PRELIMINARY	YEAR 1961 FORECAST (Median)
Electric Household Refrigerators	3,785,000	3,475,000	3,500,000
Total Electric Farm and Home Freezers	1,205,400	1,045,000	1,100,000
Chest Type Freezer	566,500	454,575	460,000
Upright Type Freezer	638,900	590,425	640,000
Electric Free Standing Ranges	933,800	860,000	860,000
Electric Built-In Ranges	753,000	665,000	740,000
Electric Water Heaters	782,900	715,000	700,000
Total Electric Automatic Dishwashers	547,300	555,000	625,000
Portable Type Dishwasher	189,180	232,000	266,000
All Other Dishwashers	358,120	323,000	359,000
Electric Food Waste Disposers	788,600	760,000	820,000
Electric Dehumidifiers	345,000	410,000	475,000

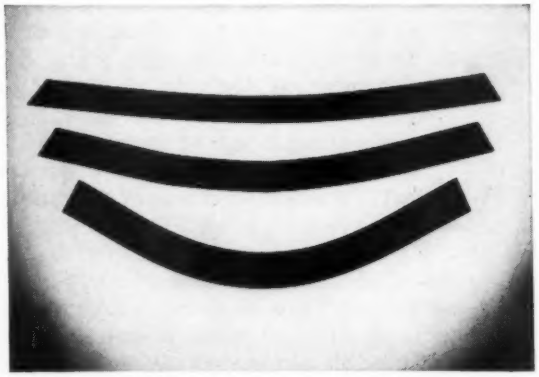
NEW BETHNAMEL SHEETS

for the best porcelain enameling you ever had

Virtually carbon-free, Bethnamel ends boiling, fishscaling problems

Bethnamel is a totally new kind of steel sheet for porcelain enameling developed by Bethlehem research engineers. All production tests show that you can get the best enameling you ever had when you use Bethnamel sheets.

Because Bethnamel has a carbon content of .003 pct or less (barely 1/10 that of ordinary enameling iron), the problems of boiling and fishscaling drop out of the picture. Other chemical elements are properly balanced to maintain superb enameling properties, and provide excellent sag resistance, drawability, and weldability.



SUPERIOR SAG RESISTANCE These three sheet steel samples were subjected to firing temperatures of 1600 degrees F. Your naked eye can discern that Bethnamel (top) held up better than enameling iron (center), and demonstrated a clear superiority over cold-rolled sheet (bottom).

BETHNAMEL HAS SUPERIOR DEEP-DRAWING QUALITIES

This crisper pan for a refrigerator is an especially tough draw because of the relatively sharp corners. Drawing-quality Bethnamel sheet passed the test with flying colors—no splits or cracks to mar the beauty of the porcelain finish.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

Steel *for Strength . . . Economy . . . Versatility*

Excellent for Direct-on Enameling, Too

Bethnamel not only enamels well in the standard two-coat process; it is giving excellent results in direct-on enameling as well. Pretreatment practices for producing excellent adherence and rich appearance of the enamel are simple and inexpensive.

Carries No Premium Price

You might expect to pay more for such a superior sheet, but the fact is that Bethnamel costs no more than conventional enameling iron. If you'd like further details, write for 6-page technical bulletin, Folder 734.

BETHLEHEM STEEL

BETHLEHEM STEEL

THIRTY-ONE PAPERS PRESENTED AND . . .

Advances in materials and processes discussed at 22nd PEI Forum

AN MPM STAFF REPORT

Forum officials discuss progress of meeting. (From left): J. B. Willis, Pemco Corp., chairman; A. I. Andrews, University of Illinois, director, University assignments; and C. J. Kleinhans, Porcelain Metals Corp., vice chairman.

SUBJECTS RANGING FROM materials and processes for one-coat porcelain enameling to properties and uses of drawing compounds kept over 230 representatives of the porcelain enameling industry "on their toes" at the recent Porcelain Enamel Institute's 22nd annual Shop Practice Forum.

Thirty-one papers were presented at the three-day session at the University of Illinois, Urbana, including the first of the Notable Lecture Series, which was presented by Professor A. I. Andrews of the U of I Dept. of Ceramic Engineering. Professor Andrews discussed "Crystallization Phenomena."

Recent progress made in materials and techniques for one-coat porcelain enameling accounted for the extensive coverage given these subjects at the Forum.

"Zero-carbon" steels

Under the general title of "Progress Report on Special Steels," representatives from Armco Steel Corp., U. S. Steel Corp., and Bethlehem Steel Co. reported on developmental work and field experience in connection with their firms' direct-on enameling stock.

R. L. Myers of Armco said his firm's Univit is presently available in 24 to 18 gauge up to a maximum of 60 inches in width. The firm is increasing production facilities for the material, he noted, and the material will soon be available in a wider range of gauges and greater widths.

Limited field experience with the stock, Myers reported, has indicated that Univit has excellent fabricating and enameling properties. "Univit is free of any enamel fishscaling propensities regardless of degree of enamel bond," he stated.

In summary, Myers predicted that the use of decarburized enameling stock "will result in an expanded use of porcelain enamel and upgrading of many finished articles which better satisfy the housewives who determine final acceptance."

U. S. Steel's entry in the "zero-carbon" steel field was discussed by D. A. Toland, who described his company's research program to develop a one-coat enameling stock of commercial grade. The result of this research, he said, is a non-boiling, non-fishscaling steel with excellent sag resistance.

D. J. Blickwede of Bethlehem reported on Bethnamel, which has been in full production approximately one year. He said production techniques have been refined to the point where "the excellent enameling characteristics of Bethnamel are uniform and reproducible from sheet to sheet and coil to coil."

Regarding preparation of the material's surface before enameling, Blickwede said it was necessary to remove 1.5 to 2.5 grams of steel per square foot of surface area. Many different pickling methods have been tried, he said, and all have been successful when the prescribed amount of metal has been removed.

"For example, five companies, each using a different method, are currently direct-on enameling Bethnamel in production," he pointed out.

Summarizing, he said, ". . . the performance of Bethnamel in production has been excellent. Indeed we are cur-

EXCLUSIVE MPM PHOTOS

"Base Metals and Fabrication" panel included (front row, from left): D. J. Blickwede, Bethlehem Steel Co.; R. L. Myers, Armco Steel Corp.; D. A. Toland, U. S. Steel Corp.; (back row) W. J. Wojtowicz, H. A. Montgomery Co.; W. D. Wilson, Pennsalt Chemical Corp.; J. W. Frame, Bethlehem Steel Co.; and F. W. Nelson, A. O. Smith Corp., session chairman.

Speakers for second half of "Base Metals and Fabrication" session were (front row, from left): D. B. Tolly, General Electric Co.; A. Potter and W. E. Pierce, PEI staff; (back row) C. Hutchinson, Ingram-Richardson, Inc., session chairman; F. A. Bodenheim, Federal Machine and Welder Co.; and H. N. Rahn, Bethlehem Steel Co.

rently expanding our facilities for making it to include our Lackawanna plant. In short, we're sure that it is here to stay."

One-coat production

Processing work with direct-on porcelain enameling was also treated extensively at the Forum. Another Bethlehem presentation, by H. N. Rahn, concerned, "Effect of Pickling on Direct-On Cover Coat Adherence."

He explained laboratory studies intended to determine the variation in pickling rate on Bethnamel with various products, the reasons for variations in this rate, and reasons for variation in enamel adherence.

Results of this test program, Rahn reported, indicated that the pickling rate increases with increasing weight loss, and that good adherence is usually associated with the faster pickling portion of the curve of weight loss vs. pickling time. Other conclusions reached included: adherence improves with increasing weight loss; no correlation exists between gauge thickness and the amount of weight removal essential for good adherence; the removal of two grams per sq. ft. virtually assures adherence of better than 80 percent (PEI meter); concentrations of surface elements change as metal is removed in pickling; and finally, the attainment of good adherence is associated with the approach of surface manganese concentration to that of the steel along with a low concentration of surface copper.

Another paper dealing with metal preparation for one-coat enameling described the experience of the Warren Co., Atlanta, Ga., in using a citric acid pickle. The paper was presented by J. J. McCallion, Chas. Pfizer & Co.

To convert the system to citric acid pickling, McCallion reported, the fourth tank in Warren's batch immersion installation was fitted with an aluminum sleeve, which was placed inside the lead lining. The tank was charged with 1200 pounds of citric acid, and the rest of the tank setup remained the same.

"The same nickel sulfate bath that Warren utilizes for their two-coat ware is used for applying nickel to the citric acid pickled steel," McCallion said. "It should be emphasized that the direct-on work being produced at Warren possesses excellent adherence and the parts are being incorporated into commercial equipment."

He added: "This was not accomplished overnight and work was necessary before the difficulties were all ironed out. The important consideration is that Warren was convinced of direct-on enameling and decided to pursue it with vigor."

GE experience

The one-coat production experience of another manufacturer was related by L. E. Fussell of General Electric. According to Fussell, GE's first production work with decarburized enameling steel occurred in the latter part of 1958. The results of these trial runs, Fussell said, were "erratic."

Additional work with the material in the summer of 1959 and again early in 1960 has led GE to the following conclusion: "Our experience with special decarburized enameling steels has been encouraging even though we have had our difficulties. The special decarburized enameling steels appear to be an absolute necessity if an economical one-coat enameling process is to be a reality.

"The difficulties we have encountered are believed to result primarily from variations in the steel processing at the mill. These are new steels made by new processes and there is no doubt much to be learned by the steel companies in the process control to produce a reliable and consistent product with the desired properties. We certainly intend to pursue our evaluations with substantial trials of all the new steels as they become available."

First of PEI's Notable Lecture Series was presented by Professor A. I. Andrews of the University of Illinois Dept. of Ceramic Engineering.

"Test Methods and Controls" topic was undertaken by (front row, from left): G. H. Bain, Whirlpool Corp.; C. G. Strobach, Rheem Mfg. Co.; E. E. Howe, Chicago Vitreous Corp., session chairman; (back row) G. E. Selby, Armco Steel Corp.; R. S. Sheldon, Whirlpool Corp.; and H. F. Russell, Ingersoll Products Div., Borg-Warner Corp.

(Below) — The "One-Coat Enameling" panel was made up of (from left); J. C. Swartz, Westinghouse Electric Corp.; L. E. Fussell, General Electric Co.; T. L. Stalter, Pemco Corp.; J. J. McCallion, Chas. Pfizer & Co.; and G. E. Miller, Ferro Corp., session chairman.

Speakers on first half of session devoted to "Materials, Equipment and Processing" were (front row, from left): J. B. Vernetti, Chicago Vitreous Corp.; W. N. Harrison, National Bureau of Standards, session chairman; (back row) F. M. Dougherty, Ferro Corp.; A. E. Farr, The O. Hommel Co.; and R. T. Arnold, Briggs Mfg. Co.

EXCLUSIVE MPM PHOTOS

Balance of session of "Materials, Equipment and Processing" was handled by a panel consisting of (from left): J. F. Matejczyk, The O. Hommel Co., session chairman; J. M. Zander, Chicago Vitreous Corp.; J. P. Finley, Jr., The Maytag Co.; M. L. Combs, Vitreous Steel Products Co.; and J. J. Baker, Whirlpool Corp.

(Below) — "Low-Temperature Enameling" and "General Interest Items" panel consisted of Session Chairman T. S. Shevlin, Ohio State University (front) and (from left) R. T. Hopper, Engelhard Industries; Howard Smith, Pemco Corp.; S. W. Bradstreet, Armour Research Foundation; R. S. Sheldon, Whirlpool Corp.; and R. Hanna, Ferro Corp.

"A New Production Method of Metal Preparation for Special Steels and Conventional Enameling" was discussed by J. M. Zander, Chicago Vitreous Corp. This process was described in the article, "One-Coat Porcelain Enameling Reaches Production Status at Westinghouse," in the December, 1960 issue of MPM.

Another presentation dealing with direct-on porcelain enameling was made by Howard Smith, Pemco Corp. Discussing "Stress Characteristics of Cover Coats Applied Direct to Steel," Smith said tests to date on this subject have not resulted in much conclusive data.

Laboratory work, Smith added, has revealed that the range of strain on porcelain enamel applied directly to steel can vary widely within one sample.

Low-temperature enameling

The heavy emphasis on direct-on techniques and materials was not carried to the extent of overlooking another timely subject — low-temperature porcelain enameling. Field test experience with low-temperature porcelain enamels on clothes dryers was reported by R. S. Sheldon of Whirlpool's Research Laboratories.

The results of the investigation, Sheldon said, showed that low-temperature ground coats and cover coats of the 1350° F. type are adequate for use on the external components of the clothes dryer. "Low-temperature ground coats and cover coats of the 1350° F. type, 1956 vintage," he continued, "are marginal for use on the dryer drum. However, present-day ground coats may be feasible for some dryer drum designs."

Concluding, Sheldon said, "A need exists for a laboratory-simulated service test that is adequate in reproducing field service conditions of dryer drums and in discriminating between types of porcelain enamel coatings."

On the production side of the low-temperature topic, Ralph Hanna of Ferro Corp. made a presentation titled, "Furnace Modification for Firing at 1400° F. and Lower." He emphasized the following five points: present enameling furnaces must be modified to successfully operate at lower temperatures; refractory muffle furnaces may be modified by the addition of heat capacity and air convection in the pre-heat zones; radiant tube and electric furnaces may be modified in essentially the same manner as the refractory muffle types; substantial fuel savings are realized when convection systems are installed; and the lower limit for successful operation of refractory muffle furnaces appears to be 1300° F.

Preparing stainless

An investigation to determine the relative merits of various pickling solutions for pickling stainless steel prior to porcelain enameling was reported by A. E. Farr of The O. Hommel Co. Twelve pickling or etching solutions were tested and evaluated, and the ferric chloride solution indicated the most promise. "However," Farr noted, "it is difficult to draw any definite conclusions due to the inconsistency of the attack or etch.

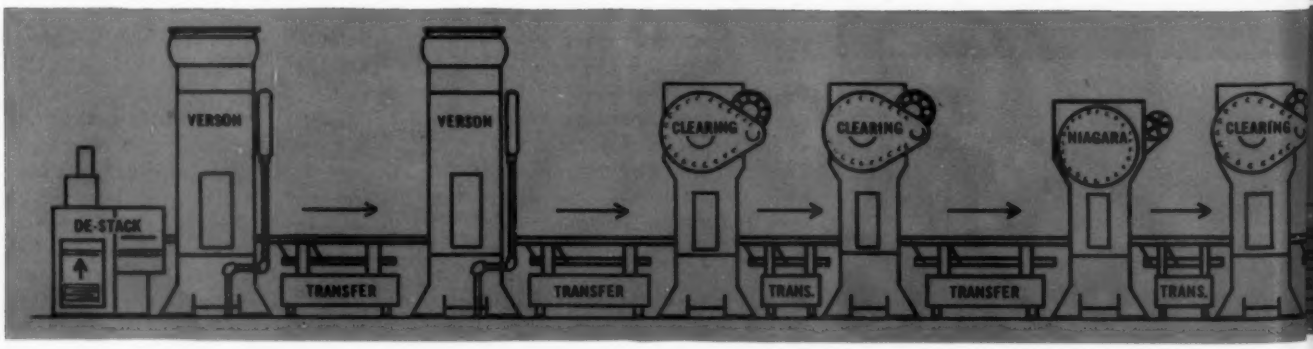
"There was a very strong attack but with an apparent rapid loss of strength of the solution. It is possible that a controlled or more uniform pickling action could be achieved by further adjustments of the formula and time of exposure. It is felt that this pickling solution warrants further investigation."

to Page 92 →

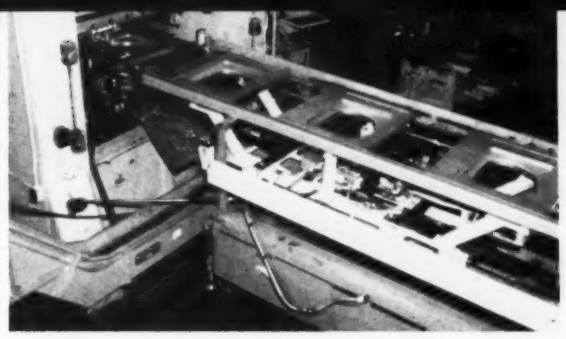
General view of the new Whirlpool top line as it appears from the loading end.

One automated line makes 42 different tops for w

by Bruno Daniel • GENERAL FOREMAN, PRESS DEPARTMENT
ST. JOSEPH DIV., WHIRLPOOL CORP.



All eight presses load and unload automatically. Transfer units eliminate intermediate manual handling. Hydraulic truck and advance die setting make possible complete die changes in four hours. Labor charges greatly reduced.



All the console mounting holes, a filter notch and bleach dispenser hole are pierced out in this press, whose die is fed from the transfer unit shown.

AN MPM STAFF FEATURE

...washers and dryers

ALL HOME LAUNDRY washing machines, as well as dryers and combination washer-dryers produced for RCA-Whirlpool and Kenmore lines in three Whirlpool plants require similar top stampings of two general types. These all have the same overall dimensions but are needed, however, in 42 different models. Each of the 42 requires either a full set of die changes or of insert changes within the dies. One set of dies is needed for automatic washer tops and one set for dryer tops. Several insert changes are made within each set of dies to provide the required stampings for the variety of models produced.

To promote economy in top manufacture, the Whirlpool Corporation recently decided to fabricate all of the 42 different tops in a single highly automated press line at its St. Joseph, Michigan plant. About two-thirds of the total output of tops are shipped to the Marion and Clyde, Ohio, plants of the company for assembly into the respective models. Each top run schedule is long enough to justify such die and setup changes as are needed for maximum economy, even though an average of 20 to 24 changes a month is necessary.

Formerly, four sets of dies, each involving three to 12 dies per set, were needed to furnish tops for Whirlpool's various product lines. This number now has been reduced to the two sets mentioned above and only eight presses are required in the new fabrication line, regardless of which particular top is being run. Thanks to virtually complete automation that nearly eliminates manual handling, a maximum of six men is needed to operate the whole line. This same crew also changes die setups when a shift from fabrication of one model to another is required.

On the older lines, from seven to 15 men were needed for operation of the line and six were needed for setup changes. In the new line, however, output is much higher, as an average of 3,600 tops are produced per eight-hour shift. This high rate is attained partly because of the faster handling from press to press, resulting from automation between presses, and partly because of automatic feed to the first press in the line.

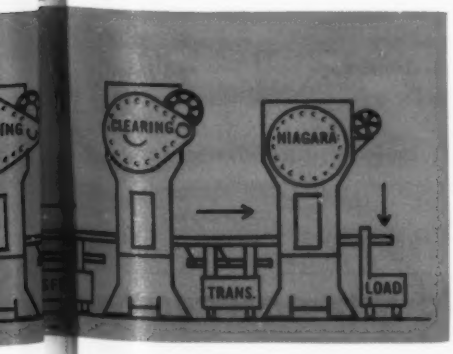
Transfer units between presses are not identical but are similar in design and operation. All are equipped with casters so that they can be rolled to one side of the line to facilitate die changes. This enables a 34,000-lb die handling truck to move to any press and to push dies into position on the press bed as well as to pull the dies transversely from the bed at the end of runs.

Such die shifting is done hydraulically and includes raising and lowering the dies as they rest on the truck bed and moving the dies from storage racks to presses and back again whenever needed. Setups that involve only changes of inserts that are relatively light sometimes are expedited by using a fork lift truck to supplement the larger die truck.

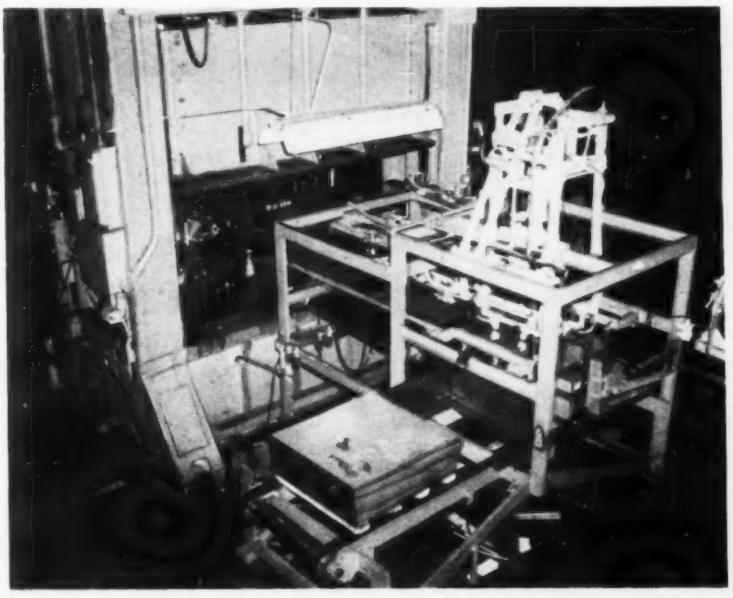
Squared blanks for top production, produced elsewhere, are set in stacks in an automatic feeder, ready for the first press in the line. Blanks are picked up by suction cups, one at a time. Magnets at the stacks make blanks fan out to avoid double loading. Should double loading start, however, a set of microswitch rollers on the first feed unit will stop the automation and prevent the

to Page 63 →

(Below) — Schematic of the automated line which includes a loader for the first press, eight presses, seven transfer units and extractor for the last press.



(Right) — This loader picks up top blanks from a stack one at a time and advances each blank into the die of the first press that, like all the other presses in the line, runs continuously, all the loading and unloading being automatic.



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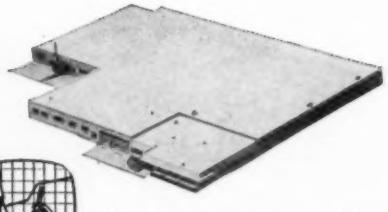

In the home appliance industry as well as in automotive, marine, farm equipment and many others, Universal Screws can be counted on to do the job they're engineered for—and more besides. It's this kind of complete dependability that gives manufacturers of washers, dryers, ranges, refrigerators, radio, television, tape recorders and other wife-saving appliances specify UNIVERSAL for screws, bolts, nuts, washers. If you're not yet a Universal screw customer there's no better time than now for you to gain all the advantages that doing business with Universal brings.

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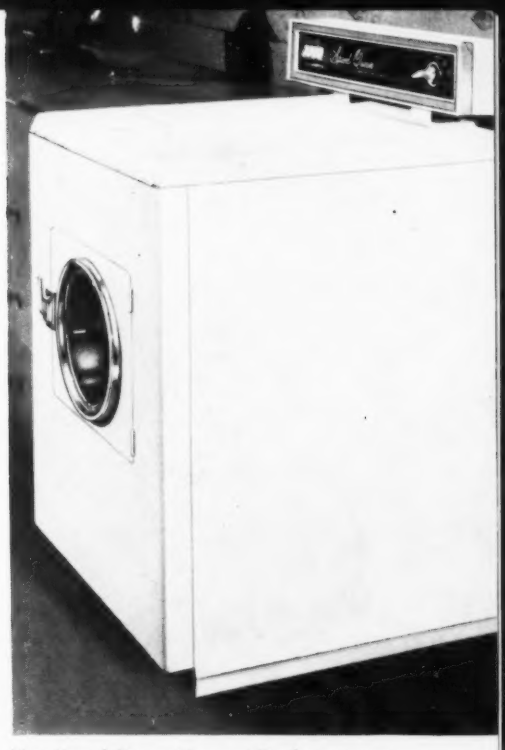
LESS THAN 26 INCHES IN WIDTH

New combo rounds out Speed Queen home laundry line

AN MPM DESIGN FEATURE



New Speed Queen Compact-Combo measures only 25⅝ inches in width. Electrical and water connections are designed to allow the washer-dryer to be installed flush-to-wall.

SPEED QUEEN HAS "completed the circle" of home laundry equipment with the recent introduction of its first combination washer-dryer.

The new unit, designated Compact-Combo, measures only 25⅝ inches in width. Proclaimed "the world's most compact," the all-electric machine is particularly suited for space-saving installations in hallways, utility rooms, linen closets and bathrooms. The balance of the cabinet dimensions include a height to the top of the backguard of 43 inches (36 inches to work surface), and a depth of 28 inches.

Laundering capacity of the unit is not affected by the compact design, as the 22-inch diameter, six-vane wash-and-dry cylinder accepts a fullsize load.

Fan and vent are eliminated by the use of condenser-type drying. Moisture-laden air hits cold condenser plate, water condenses, and water and lint go down the drain.

Aside from the compactness of the machine, thoughtful design practices are apparent in several other areas, including controls and programming; bleach dispensing; service accessibility; and vibration control.

The combo's cabinet top, basket, outer jacket and door liner are finished in porcelain enamel. Baked enamel is used on the balance of the cabinet.

Programming

Simplicity of controls combined with flexibility of cycle selection offer the housewife convenient laundering of all fabrics. The control panel consists of four pushbuttons and a timer.

The washing program provides cycles up to 12 minutes in hot, warm or cold water. An automatic series of three power rinses consisting of warm or cold water, depending upon the wash selection, follow the wash period.

Time cycles eliminated

Time cycles in the drying operation are eliminated by selection of a "normal" or "delicate" setting. Damp dry may be selected for normal loads, if desired, and the drying cycles provide a five-minute cooling period.

The timer knob is the master control

Spin-type friction clutch is used in place of transmission. According to Speed Queen engineers, the clutch provides positive action and makes for ease in servicing the unit.

for the entire unit. It may be used to interrupt the cycle at any point if clothes are to be added or removed. The cycle may also be manually advanced by turning the timer knob.

Cycle selection

One switch on the control panel controls water temperature. The other three switches provide the following cycle alternatives: wash and dry (normal or delicate fabrics — normal or small loads); wash only; damp-dry (normal size loads only); or combinations of these cycles. If a drying cycle *only* is desired, the timer is set at the beginning of the "dry" setting on the dial. The timer also has settings for washing and drying delicate or normal fabrics.

Normal wash cycle

The normal wash cycle totals 36 minutes, which consists of a 12-minute wash period and three rinses. The delicate wash cycle totals 22 minutes — a five minute wash and two rinses. Water consumption for the two cycles is 16 and 12 gallons respectively.

Water level in the machine is controlled by the timer and a pressure switch. Bleach is added to a washing load through a tube which runs down the outside of the cylinder. The bleach is diluted in the outer tub and filtered into the tumbling clothes to obtain the proper bleaching action.

The cylinder, which spins at 52 to 54 rpm in the wash cycle and 512 rpm in the drying cycle, is equipped with an access plate which provides accessibility to the drain trap.

No fan or vent

A condenser-type drying system eliminates the need for a fan or vent. Moisture-laden air hits a cold condenser plate (cooled by water), and the moisture condenses and runs down the drain with the lint. The condenser plate requires .4 gallons of cold water per minute, or an average of 24 gallons of water for the typical drying cycle.

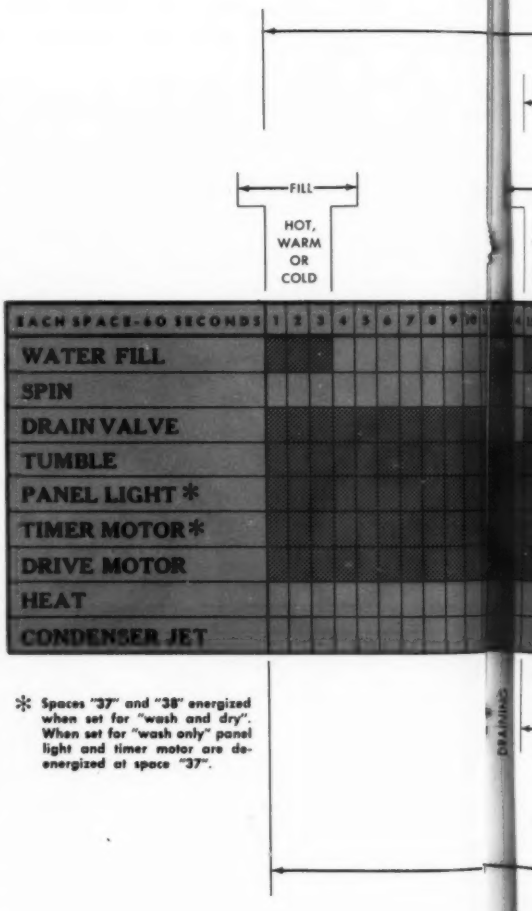
The shaft which supports the revolving cylinder is the main structural feature of the combo, according to Speed Queen engineers. To assure more than ample strength, the shaft was designed to be supported by two ball bearings — one at each end of the shaft.

Another engineering feature of interest is the elimination of the transmission in the power mechanism. A simple, spin-type friction clutch is employed to transmit power from the motor to the cylinder. According to Speed Queen, this device provides smoother operation, less vibration and longer life than the conventional transmission. In addition, the spin clutch is easily accessible for service.

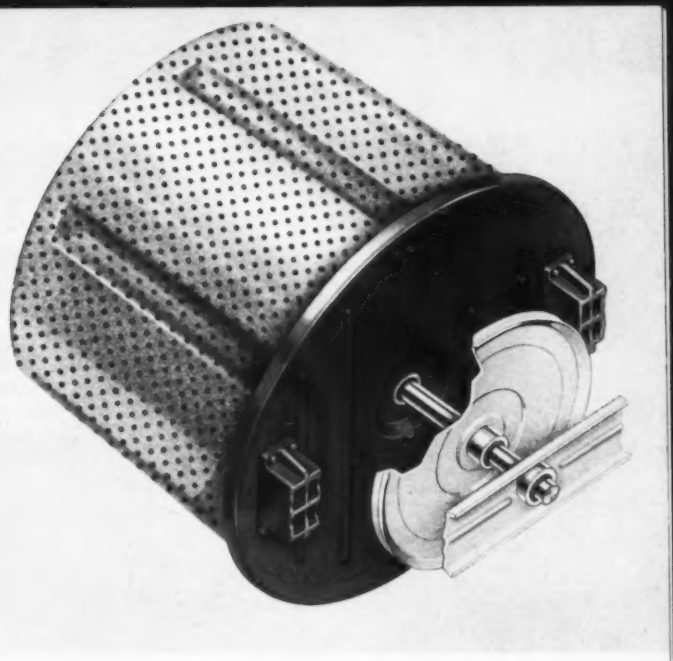
Accessibility

Design engineers who worked on the Speed Queen combo were obviously aware of the value of easy accessibility for service. The cabinet top and front panel swing on the same hinge. The cabinet top is raised by removing two screws, and the front panel can be lifted up after removing six screws. The serviceman is ready to go to work on the machine components in a few minutes.

(Below) — Accessibility is provided by having top and front panel mounted on same hinge. Top is flipped forward by removing two screws. Front panel is held by six screws.



* Spaces "37" and "38" energized when set for "wash and dry". When set for "wash only" panel light and timer motor are de-energized at space "37".

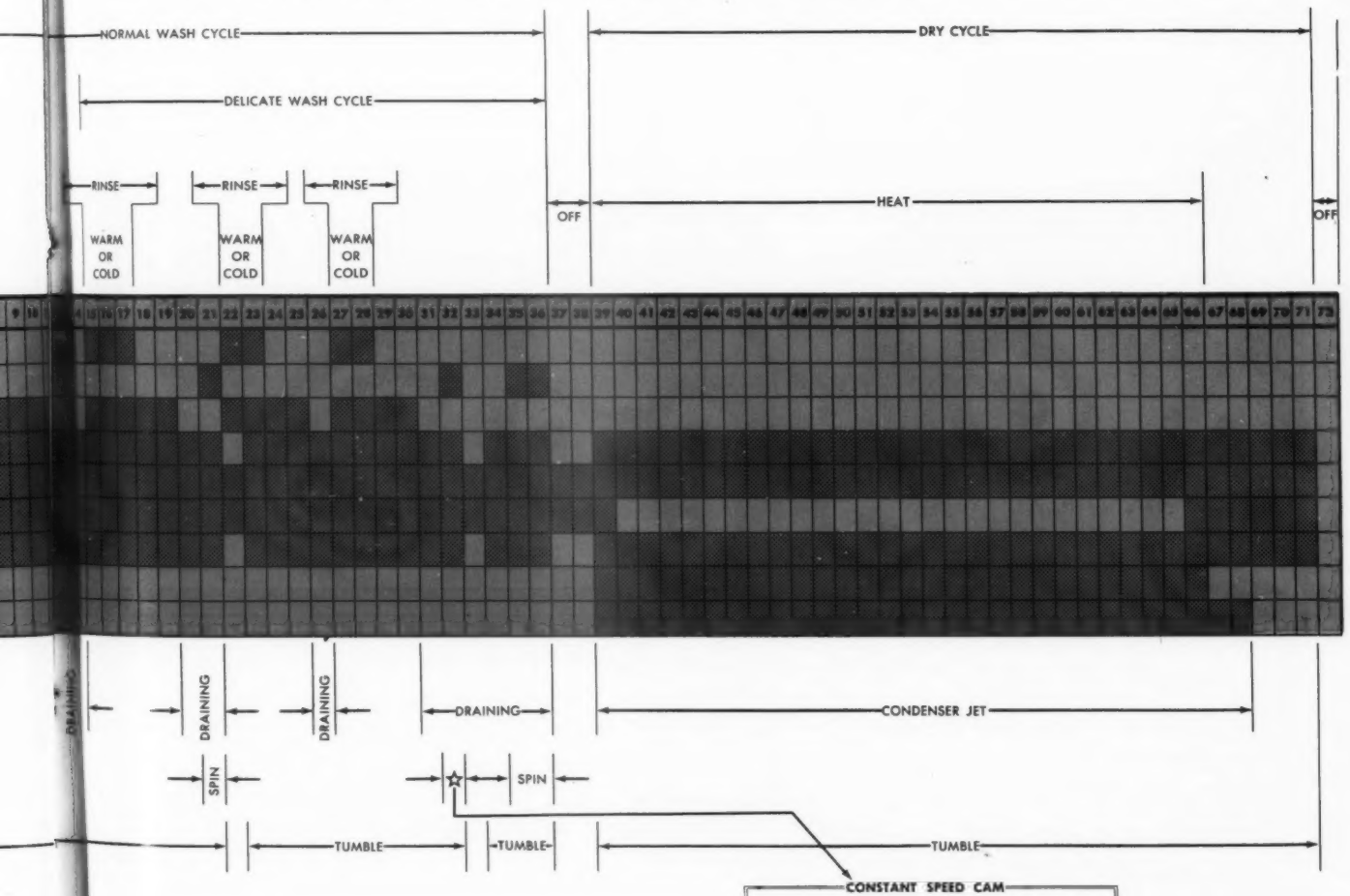


Revolving cylinder shaft is supported by two bearings.

Safety devices built into the combo include a door switch which cuts off operation when the door is opened; a load balancer which stops spinning action if load becomes unbalanced and returns the machine to tumble speed to redistribute the clothing; the water level switch; a high-heat safety thermostat; a motor overload protector; and a belt switch which cuts off operation in case of belt failure.

The unit is powered by a ½-hp, permanently lubricated motor which is mounted on rubber for vibrationless operation. All electrical and water connections are arranged so that the machine can be positioned flush against the wall.

COMBINATION MODEL 325 TIME CYCLE CHART



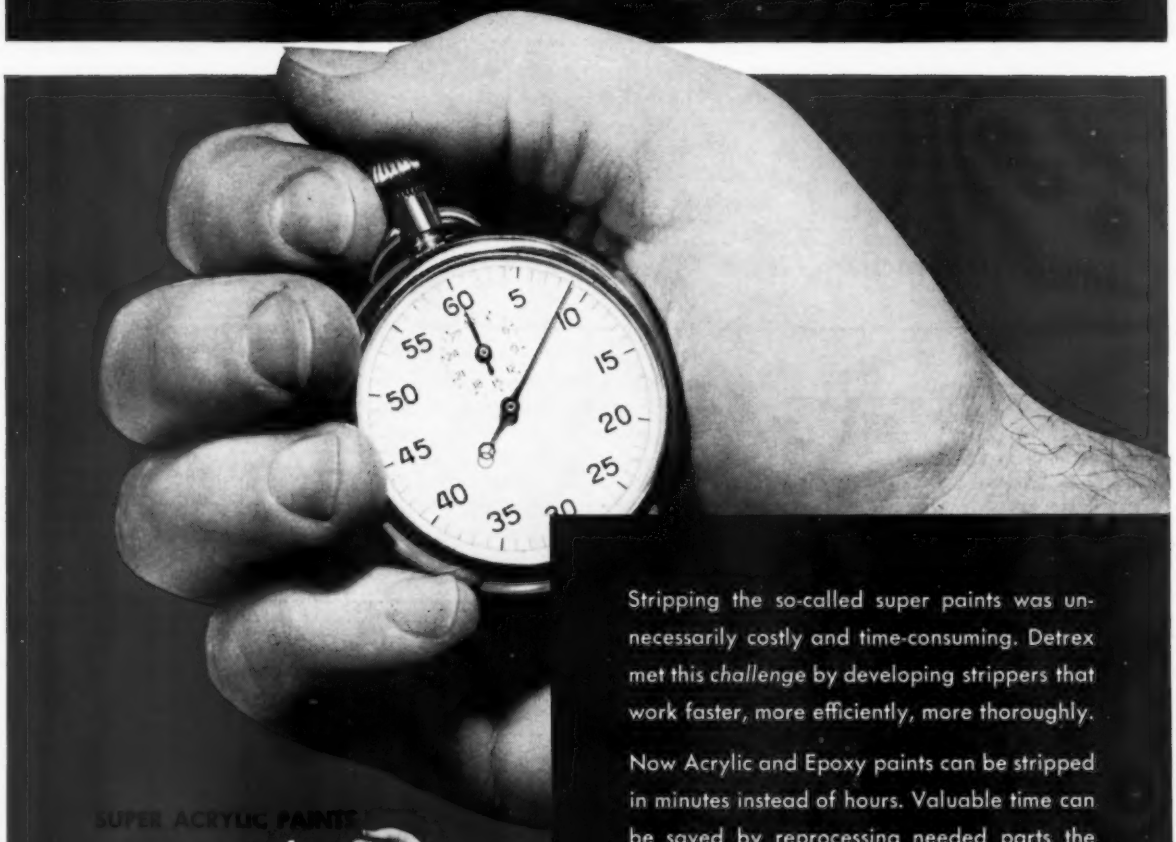
FILLED IN AREAS INDICATE ELECTRICAL CIRCUIT CLOSED (COMPLETED). 60 SECONDS TIME BETWEEN IMPULSES (EACH SPACE REPRESENTS 60 SECONDS). NOTE: SHADED DRAIN VALVE SPACES INDICATE DRAIN VALVE CLOSED.

CONSTANT SPEED CAM

TUMBLE	6	Seconds
SPIN	3 ± 1	Seconds
COAST AND STOP	25 ± 2	Seconds
TUMBLE	17 ± 2	Seconds
SPIN	3 ± 1	Seconds
TUMBLE	6 ± 4	Seconds

1 MINUTE

Now You Can Time Paint Stripping With a Stopwatch



Stripping the so-called super paints was unnecessarily costly and time-consuming. Detrex met this *challenge* by developing strippers that work faster, more efficiently, more thoroughly.

Now Acrylic and Epoxy paints can be stripped in minutes instead of hours. Valuable time can be saved by reprocessing needed parts the same day.

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RESEARCH, DEVELOPMENT AND TESTING are vital to the expansion and advancement of the appliance industry.

Research uncovers new products and engineering improvements in existing products — and it is much easier to market new and improved products containing genuine design advances than to try selling the public on superficial, non-functional features.

While research opens the door to product improvement, *development* puts these ideas to work by incorporating them into new or existing products. A reliable, consistent *testing* program acts as a watchdog. Appliances must be constantly checked, compared and analyzed to make certain they are performing as the design engineers intended. And of course, testing in itself is a form of research.

The program for product improvement and evaluation at the Columbus, Ohio plant of the Westinghouse Electric Corp. has the two standard necessities — personnel and equipment — but on a scale fitting the magnitude of the plant, which encompasses over two million sq. ft. of floor space.

"Inside" room of a typical psychrometric test setup for air conditioners. At left is a central console for controlling air conditioning equipment for test room and metering and distribution of electrical power to four test positions.

WHERE PROGRESS BEGINS:

Development and testing at Westinghouse

EXCLUSIVE MPM PHOTOS

Over 40,000 sq. ft. of laboratory space devoted to development and testing illustrates the importance the company places on product development. Products developed in this laboratory include refrigerators, home freezers, room air conditioners, water coolers, dehumidifiers, dishwashers, water heaters and garbage disposers. The laboratory is divided roughly into work areas and test areas for each product. The work areas are equipped with bench power tools and other necessary equipment such as welding sets, vacuum pumps, etc., to allow engineers and technicians to do the mechanical and electrical work of building test setups. All told, there are 26 controlled environment test rooms designed to fit the needs of their associated products.

An important part of the air conditioning development section is a group of eight specialized test rooms. Six of these rooms are for environmental testing of room air conditioners and the other two are sound rooms for detailed study of noise problems. A feature of the sound rooms is the construction of the wall in which the unit on test is mounted. One room has a wall of masonry construction simulating a brick home or apartment building while the other is of standard frame construction for comparative studies.

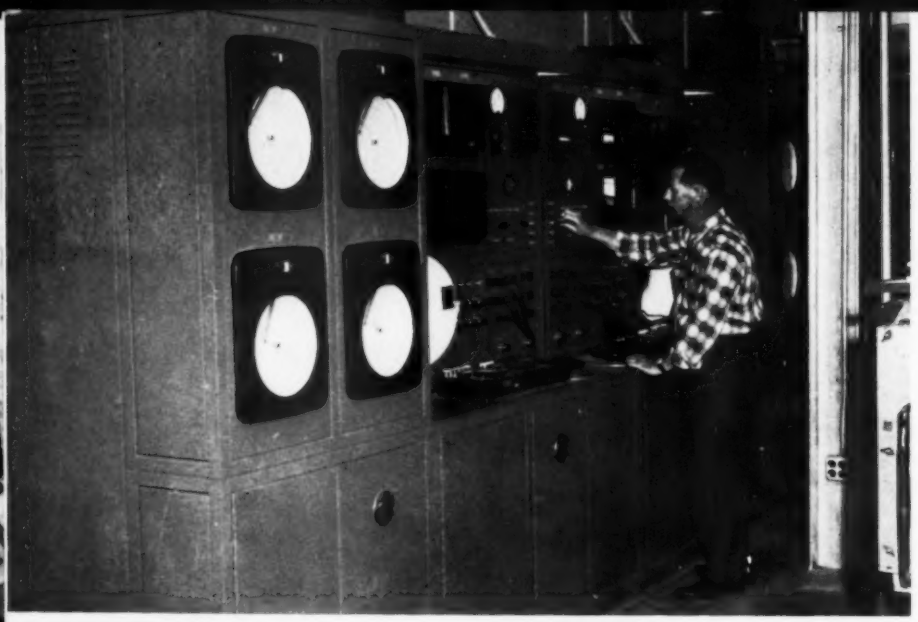
A comprehensive developmental and test program for new products and product improvement is essential for a mass-produced product. Without such a program your warehouse can very quickly be filled with product problems. You must be sure — before production starts — that the product is well engineered. Our laboratories provide the facilities for the model building and thorough testing needed.

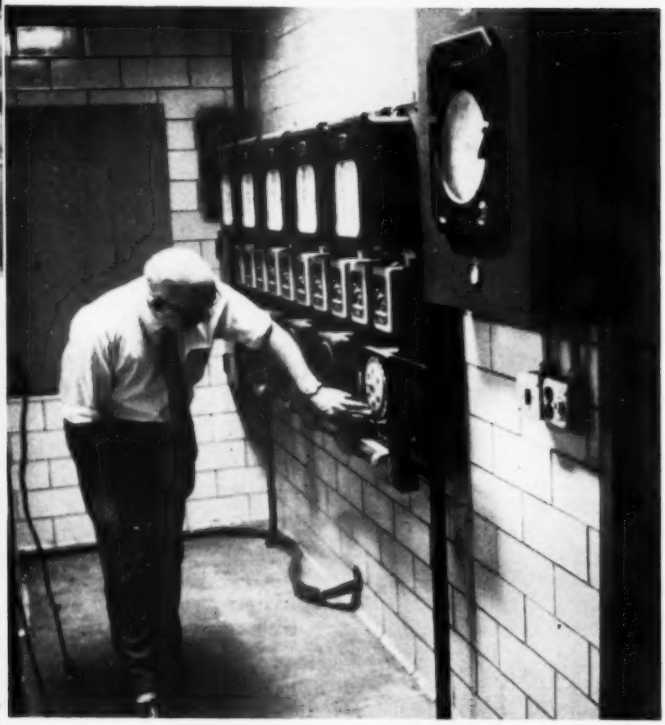
Constant alertness is needed in recognizing what the product will meet in the field and simulating such usage in the laboratory. Nothing can be left to chance.

Russell Cape, Manager of
Engineering Services
Westinghouse Electric Corporation
Major Appliance Division
Columbus, Ohio

Environmental testing

The six environmental rooms include three "psychrometric" rooms and three "calorimeter" rooms. All are precisely controlled in temperature and humidity. Each test room is in reality two rooms with a common wall in which the unit on test is mounted. One of these rooms is operated under temperature and humidity conditions to simulate outdoor conditions while the other simulates indoor conditions. "Outdoor" temperatures as low as —15° F. for heat pump testing and as high as 120° F. for standard testing can be achieved in these

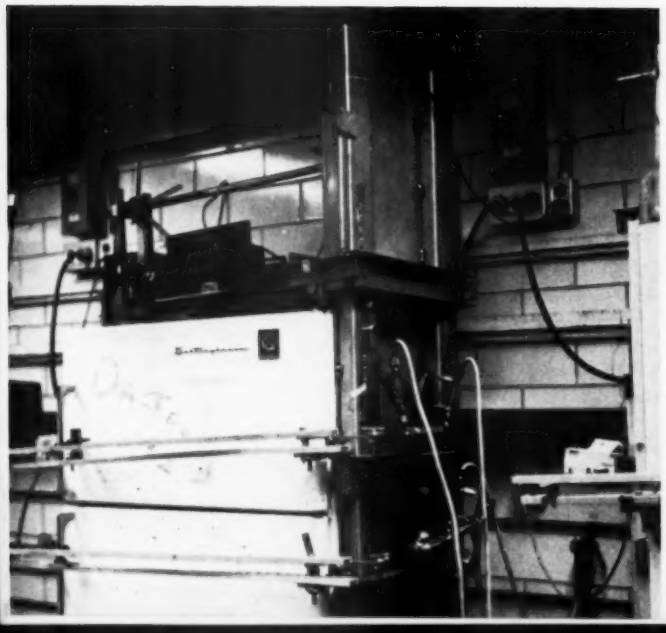




(Above) — Control consoles for two calorimeter rooms. This unit controls room temperature and humidity.

(Left) — Control equipment for automatic refrigerator door opener mechanism.

(Lower left) — A typical setup for checking temperature changes in refrigerator caused by opening and closing door. Thermocouple mechanism on top of refrigerator transmits temperature information to the data gathering system.



(Below) — Data gathering center designed by company engineers records temperature and time data on automatic typewriter.

rooms. The "indoor" rooms can be varied over a temperature range of 45° F. to 120° F.

An interesting feature of the calorimeter test room is designed specifically for running heat-balance tests to determine the basic heat and moisture removal capacity of a room air conditioner. To run this test accurately, extremely close control of temperature and humidity is required. Previously, this control was achieved by hand monitoring because of the many variables. Automatic control systems were developed for the Columbus calorimeter rooms which allow rapid stabilizing of test conditions and control of conditions to ± .1° F. of temperature and dew point.

Refrigeration products

An outstanding example of modern development and testing facilities is the laboratory for refrigerators and home freezers. A group of engineers and technicians produce, with model shop assistance, samples of refrigerators and freezers incorporating new design concepts. These samples are in the development stage. After exhaustive testing to develop desired performance, design concepts are passed along to another group of engineers who interpret these concepts into terms of engineering information to all other departments. From this information the model shop produces samples of each model in the line. These samples are then passed on to a product evaluation group of engineers and technicians for exhaustive testing to ensure that original design performance is achieved before production is allowed to start.

The testing of refrigerators is carried out in ten test rooms. Six of these rooms have temperature control only, over a temperature range of 50° F. to 120° F. The other four, while having this same temperature range, also control humidity for simulating humid areas.

The open-door test

One of the interesting techniques employed in the lab is one which records temperature variation in a refrigerator

caused by opening and closing the door. The door is opened and closed automatically on a cycle which simulates home usage in number and time lapse of openings. Mounted on top of the refrigerator is a thermocouple mechanism which transmits temperature information to a data gathering center designed by Westinghouse engineers. The data is automatically typed by an electric typewriter, recording number and time of the test as well as the temperature information.

Testing and development at Westinghouse does not concentrate solely on end products. Since Westinghouse manufactures the motors and compressors used in its refrigeration appliances, complete development facilities are provided for these components. The motor laboratory includes a quantity of dynamometer stands equipped with electronic speed indicators. Elaborate power panels control and distribute the varieties of power needed for the tests, including odd frequencies.

Two test rooms are used for compressor development. These rooms are equipped with compressor calorimeters which determine the heat pumping capacity of the compressors which range from one-tenth to two hp. Samples of compressors are machined in the model shop and are assembled in a special dust-free room for delivery to technicians for test purposes.

Analyzing sound

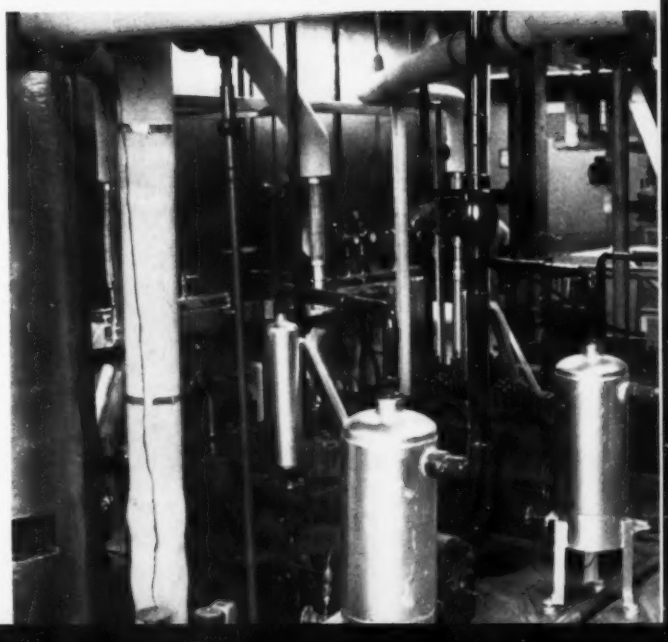
A recent addition to the laboratory's facilities is a "sound studio" which was built to record and analyze sound and vibration from any of the five sound test rooms in the test center. A stereophonic tape recorder can pick up the sound or noise information from any individual room. The tape is placed on an editing machine which selects the portion of the tape needed for analysis. The edited tape is then run through a vibration analyzer which makes a spectrum of the recorded sounds.

Other facilities include a work and test area for dishwashers, electric water heaters and garbage disposal units, a life test room under controlled temperature conditions where 100 refrigerator units may be tested simultaneously, and a work area and test center for water coolers and dehumidifiers.

An important part of the laboratory functions is the equipment design section where special test equipment not commercially available is designed and built. The equipment built ranges from simple life test devices for checking compressor mounting springs to design of complex test rooms.——MPM

(Above) — Test bench for compressor motors includes an electronic speed recorder, dynamometer stands, a power distribution panel and associated test and control equipment.

Recently constructed "sound studio" can pick up sound on tape from any individual room in the test center. Tape is placed on an editing machine and selected portion of tape is run through a vibration analyzer for a spectrum analysis of the sounds recorded. Part of the editing equipment and the noise spectrum analyzer are visible at right. Recorders are in background.



Section of central refrigeration system used for the control of temperatures in test rooms. Total capacity of the system is 100 tons.

AN MPM STAFF FEATURE

New paint stripper a

PAINT STRIPPING is one of the less glamorous aspects of a paint finishing system. But at The Maytag Co., Newton, Iowa, this lack of glamour is not accompanied by a lack of efficiency.

The recent installation of a dip-type paint stripper at Plant 2 of this home laundry equipment manufacturer has resulted in efficient cleaning of all conveyor hangers used in the organic finishing systems of both plants.

The stripping unit has expedited cleanup of hangers and reduced the quantity of hangers required overall as compared to former methods of soak stripping in chemicals which required 24 to 48 hours. Handling has also been reduced since the unit is located adjacent to the paint finishing department.

It is essential to maintain clean hangers in connection with electrostatic paint applications employed in Maytag's plants.

By following a regular work schedule, all hangers are stripped at least once a week. This includes hangers used both in prime and finish coat applications.

Two-tank system

The stripping unit consists of two tanks — one for the stripper and one for a hot water rinse — plus a sludge-collection system and fume eliminating equipment.

The stripping tank, which holds 27,000 pounds of liquified molten salts, measures six feet deep, six feet long, and five feet wide. The stripping solution is

(Left) — Entrance end of paint stripping unit. Hangers are suspended from electric hoist controlled by operator. Air-operated sliding door is in open position.

EXCLUSIVE MPM PHOTOS

maintained at 900° F. by gas immersion burner tubes. Water in the rinse tank, which is located adjacent to the stripping tank, is heated to 150° F. Air-operated sliding steel doors are mounted at the entrance and exit end of the stripping unit. These doors are kept closed for protection against splattering from the tanks. They are opened only when hangers are entering or leaving the unit.

The stripping procedure requires one employe, who uses an electric hoist to feed the hangers into the stripper. Various racks are available to accommodate the different sizes and shapes of hangers used in the company's paint finishing system. Depending on the size of the hanger and thickness of the coating, six to 12 pieces make up a load. Smaller hangers are loaded in wire baskets.

Conveyor-mounted hoist

The hoist, which is mounted on an overhead monorail conveyor, carries the hangers into the stripping unit. The hangers are lowered into the stripping tank (after the entrance door has been closed) where the paint buildup is burned rapidly when the hangers come in contact with the 900° F. molten salts.

The tank's design provides a "boil zone" above the molten bath and below the top edge preventing the solution from spilling out of the tank during the stripping reaction.

Complete stripping of the hangers is signaled by cessation of the burning reaction. The "activity" in the stripping tank is viewed through heat-treated safety glass windows. Following stripping, the hangers are transferred to the hot water tank where they are rinsed for about one and a half minutes. Average

per at Maytag

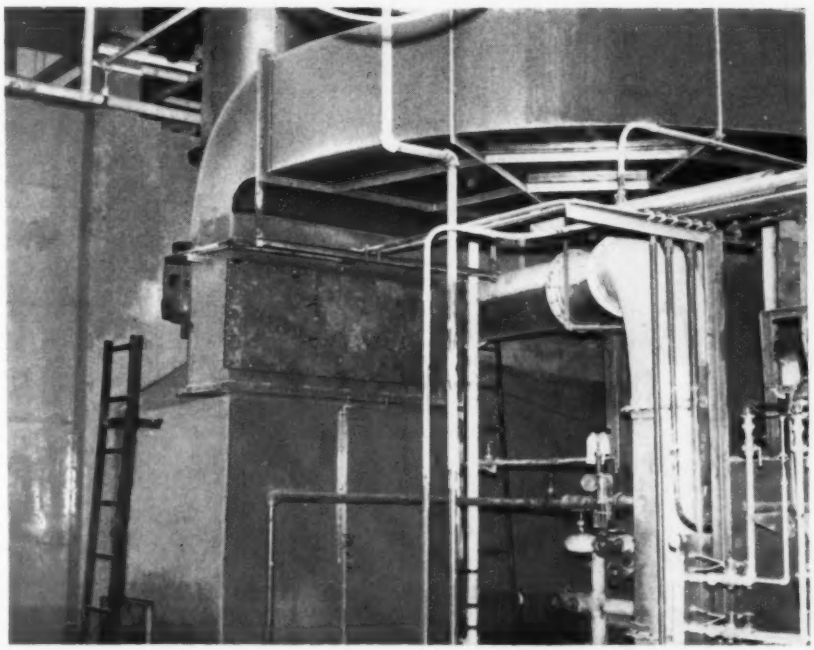
time for entire cycle is about 10 minutes, depending on the number of pieces in a load and the thickness of the coating.

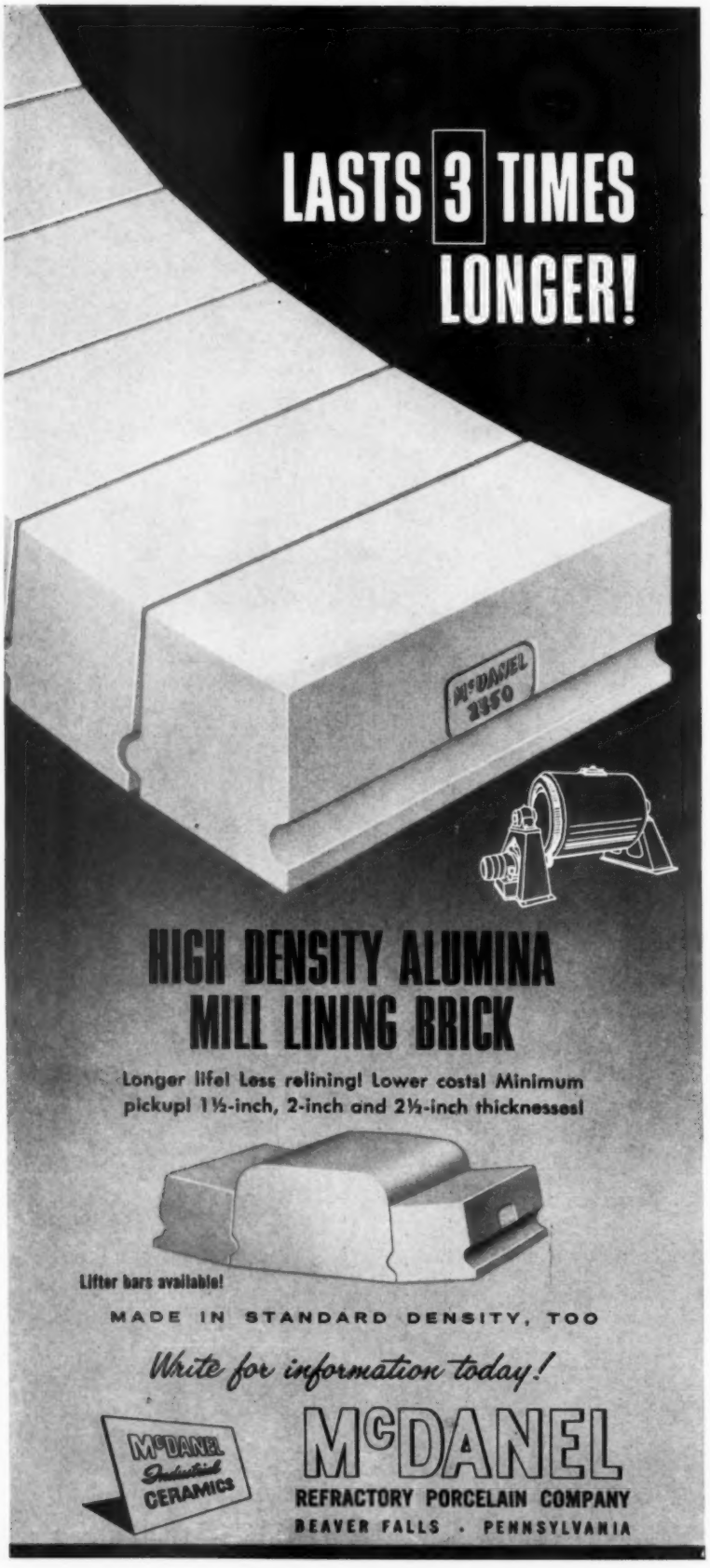
Sludge removal

Sludge (the pigments of the paint which don't oxidize and burn off) is circulated into the "sludge zone" at the side of the stripping tank. Here the sludge settles out of solution into a sludge pan. The sludge pan is removed twice daily and set aside to allow the sludge to harden. When the sludge is in a solid form it is removed from the pan and dissolved in an overflowing water tank. The water, with the sludge in solution, is then processed in the company's chemical waste treatment plant.

An air wash system is utilized to remove the fumes created in the stripping tank. Residue in the escaping air is captured by a water spray wash. The water is run over ceramic saddle filters, and the residue is deposited on the filters. These filters are removed and cleaned regularly, depending on total usage.

(Above) — Hangers emerging from molten salt stripping bath. Pieces are then rinsed in water tank (background). Windows for viewing operation are visible at the right. (Below) — Air-wash system at rear of stripping unit removes fumes and fly ash from the exhaust. The water is then filtered through removable ceramic saddle filters.

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MPM

editor's mail

The "pros and cons" of model change

Gentlemen: In the December issue appears an article, extracted from the ASID convention, titled "Why Model Change."

The pros and cons of this question have never been sufficiently clear to the buying public, and the constant turmoil and hoorah over this point have placed the designer in the same category as the schemer from Madison Avenue. Nothing could be worse for the designer or for the business of manufacturing and selling consumer goods.

The point the public would understand and must be stressed throughout all discussions of this now sensitive question is quite simple and, in my own experience in this field, which is not inconsiderable, one that has had the least real attention given to it.

All clients that I have serviced have a basic problem: How can we develop more economical design to hold the price line against competition, both foreign and domestic? It should be reasonable for the consumer to accept model changes based upon the demands of economic production. And, when retooling, automating, or changing manufacturing procedures, is it not natural that the appearance design also change? This, to me, is the answer to critics of change. I do suppose that RCA, for instance, could very well house a new transistor circuit in the very first plastic case they ever made. But would it be economical? The real basis for the argument against change is an obscure one that only a head shrinker could dig out, but I rather imagine that there is confusion about the difference between fashion and style, and economy and waste.

John D. Beinert
Member American Society of Industrial Designers
New York, N. Y.

MPM would like to hear what other readers think about this subject.

The Editors

More on the model change

Gentlemen: Enjoyed your article, "Industrial Designers Hear Pro and Con on Annual Model Change," which appeared in the December, 1960 issue of METAL PRODUCTS MANUFACTURING.

May we have your permission to reprint this article in the EXECUTIVE REVIEW?

The EXECUTIVE REVIEW is an external house organ used by several firms.

We would, of course, be happy to give credit to METAL PRODUCTS MANUFACTURING in our cover index, in the title of the

to Page 90 →

Inspection of finished parts. Three more extrusions are visible in furnace.

FOR PORCELAIN ENAMELING ALUMINUM:

Evolution of an infra-red porcelain enameling furnace

THE CALIFORNIA METAL ENAMELING CO., Los Angeles, was one of the early companies to delve into the possibilities of porcelain enameling aluminum. It has long since been proved to the satisfaction of Cameo management that aluminum can be successfully porcelain enameled, whether in the form of sheet, extrusions, or castings. This statement might tend to over-simplify the problem, for it has also been determined that the composition of the metal plays an important part in the end result.

Earlier articles have described development work and practical application methods for porcelain enameling aluminum. It is the purpose of this article to describe the evolution of a special type of enameling furnace for this work.

Type of production work

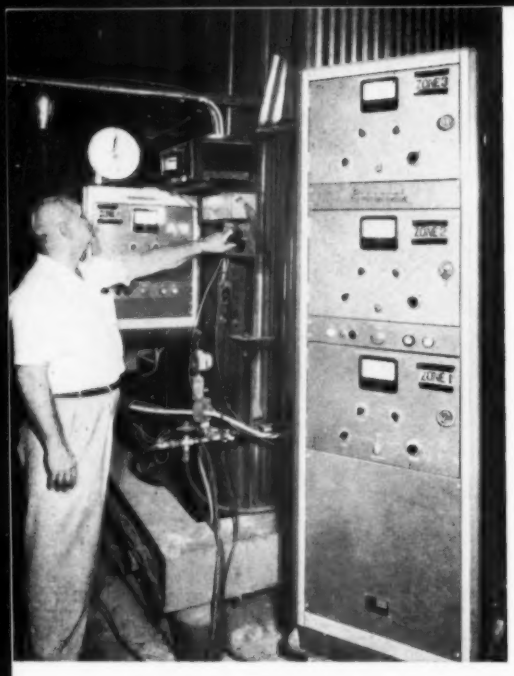
In general, the greater part of the porcelain enameled aluminum run at Cameo falls under the classifications of sign and architectural components.

Freeway signs, for example, are in many cases five feet by ten feet, using a laminated panel with honeycomb core. Faces are porcelain enameled and the reverse sides are anodized. Within this core is a framework of aluminum extrusions.

A large number of porcelain enameled extrusions for highway signs have been run. Many of these are flat-faced extrusions with three legs. They are generally 12 inches wide and from six to 24 feet in length. On a background of flat-faced extrusions are applied raised porcelain enameled aluminum letters with reflector buttons. Cameo buys and enamels raw shapes, and assembles the reflectors to complete the signs.

Architectural panels are produced in quantity for laminating — some single and some double-faced. Window frame curtainwall units are also produced

The word "Cameo" is not new to the pages of this publication. Two articles published in recent years about operations at California Metal Enameling Co. serve as a backdrop for this feature on furnace development. In October, 1954 a feature, "Cameo is enameling aluminized steel," described some of the early work of this company with aluminum enamels on a specially coated steel. An article in the July, 1956 issue, "Porcelain enameling aluminum at Cameo," described the result of a long research program and presented the findings of this company in relation to production techniques. This current report describes how the combination of research and plant application experience pointed the way to the use of a new type of porcelain enameling furnace.



Paul Kates, ceramic engineer, adjusts new control system. The system has eight thermocouples, including one each to four control units, one to the recording pyrometer, and three feeding into the indicating pyrometer.

in quantity. Expanded aluminum and formed sunshades are another product of this department. Permanent-mold aluminum castings for fire alarm boxes round out the experience with sheet, extrusions, and castings.

Approximately 25 percent of the total production at Cameo is porcelain enamel on aluminum.

Gold-lined furnace

An infra-red lay-down oven (furnace) using quartz lamps with tungsten filaments was installed about two years ago for the firing of aluminum enamels. The heat source consisted of 28 reflectors built into a single unit, with all heating units at the top of the furnace.

One of the first steps in the evaluation of the present installation was to build a complete new shell of 18-gauge stainless steel and finish all inside surfaces with liquid bright gold. The purpose of the gold is to minimize temperatures of reflector units and provide a uniform and efficient heat source.

The laydown conveyor consists of a stainless steel link belt.

The furnace shell consists of uninsulated steel sheets, as described, mounted over structurals.

The furnace consists of four heating zones which are divided as follows: zone one — 800° F.; zone two — 950° F.; zone three — 1000° F.; and zone four — 980° F.

It was soon determined that the conventional means of controlling the furnace radiation did not provide the fine degree of control desired for Cameo production. The original furnace had an on-off control which proved quite unsatisfactory for systems of this type.

Quartz lamp application

Although quartz lamps had been used effectively for several years where a readily controllable source providing high heat density and high temperature was desirable, many of the early applications were under laboratory type conditions. More recently this type of heat source has been applied for brazing of stainless steel honeycomb panels, stress relieving and heat treating, paint drying, and, as described here, porcelain enameling.

Desirable characteristics of this type of heat source include the instantaneous nature of the heat application and the ability to shut down a furnace and obtain the shortest possible cool-off time. Due to the very nature of the heat source, a good control system is imperative.

New control system

After making a number of basic changes in the original furnace installation, Cameo installed a complete new control system, utilizing 130 kva rated water-cooled Ignitrons at a 460-volt level. Four channels are utilized with a total capacity of 520 kw. It is reported that the controller will vary the load power from approximately 3 to 95 percent of full power, and that instantaneous response is assured.

The present control system has eight thermocouples, including one each to

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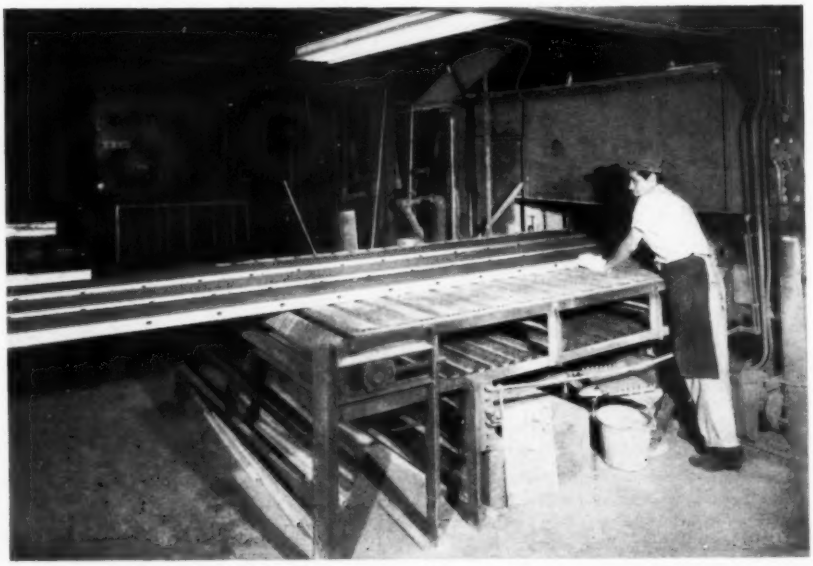
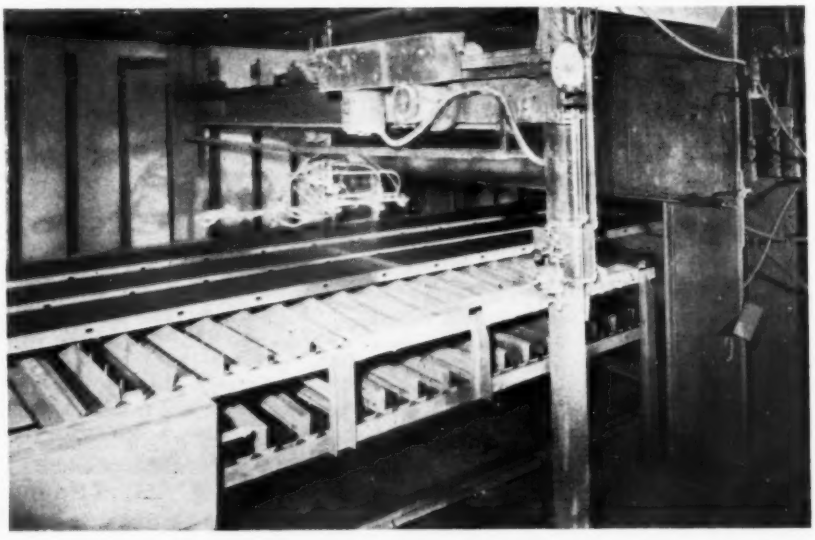


Loading highway sign extrusions on spray conveyor. (Below) — Spraying 23-foot extrusions with automatic spray machine. Laydown conveyor consists of a stainless steel link belt.



Forecast supplements

Caloric

ten percent increase for 1961

by Victor Klein,
Director of Advertising Promotion,
Caloric Appliance Corp.

AS YOU KNOW, OUR COMPANY manufactures built-in and free-standing gas ranges, sinks, splash plates, range hoods, both the vented and non-vented variety, as well as gas incinerators.

Based on the fact that 1960 appears to reflect a seven-percent increase in volume over 1959, we conservatively estimate that 1961 will reflect a ten percent increase over our 1960 volume.

Our plan, our product, and our promotion are the causes for this continued success, and we are bending every effort toward exceeding this estimate.

Admiral

sales recovery expected soon

by Ross D. Siragusa, President,
Admiral Corp.

THE LENGTHY STEEL STRIKE and the subsequent race to fill pipelines were forerunners of the general weakness that overtook the appliance industry and the nation's economy during 1960. It takes about a year for the country to recover from the sort of economic indigestion we have been experiencing.

Fortunately, manufacturers re-adjusted their production schedules as soon as the signs of weakness became apparent. As a result, excess inventories have been worked off and production is at a realistic rate.

We forecast slightly higher appliance sales for the industry during the first half of 1961 and the recovery should speed up during the second six months . . .

We foresee a pickup in TV movement by midyear and anticipate that 1961 unit sales will equal 1960's 5.7 million and may possibly exceed it . . . 1960 will be one of the largest radio years in the company's history, and the boom is expected to continue into 1961.

Roper

the range replacement cycle

by Richard S. Burke, President,
Geo. D. Roper Corp.

I HAVE ONE COMMENT that might be worth recording. After the war, all appliances had a burst of sales due to the shortages which had existed for several years. Most of the other appliances have felt their first replacement sales of the products bought in those years but, since ranges have few moving parts and far longer life, they have not felt their lift from this market as yet. I think they are about to enter this part of the cycle and, therefore, should be helped.

Carrier

central heat pump sales to continue increase

by Russell Gray, President,
Carrier Air Conditioning Co.

HOME OWNERS ARE RAPIDLY embracing the concept of central air conditioning and this increasing acceptance indicates considerable growth in this market in 1961.

Today, weather has less effect on sales in this field than before because more builders are installing central systems in new homes. Some air condition entire projects while many others offer central systems as a reasonably-priced option. By 1970 I believe three out of four new homes will be centrally air conditioned at the time of construction and some 15 to 25 million residences will have some kind of air conditioning.

A new lightweight, high-speed welded hermetic compressor called the Micromite will enable Carrier to reduce prices slightly on a new line of central residential equipment which will be quieter and less costly to operate.

Furnace sales should hold even in 1961 while central heat pump sales are expected to continue to increase, particularly in the Far West and South. Any increase in room unit sales will be slight.

Norge

another period of growth

by Judson S. Sayre,
Chairman of the Board and
Chief Executive Officer,
Norge Div., Borg-Warner Corp.

FOR CONSUMER HARD GOODS, such as our appliances, the market is now intensive, rather than extensive, and depends less on new customers than on replacements, with new and improved products. This is a very important point and must be stressed, again and again, in our marketing considerations.

The most successful companies will be those that recognize earliest the dual nature of the hard goods market in the early sixties: limited physical growth but increased dollar potentials. Selling is already highly competitive within the industry, but the emerging pattern promises sales warfare against all other consumer durables, such as compact cars, portable TV sets, household furniture, sports and leisure equipment.

The first quarter of 1961 will suffer in comparison with a good first quarter of 1960, but the second quarter will look good in comparison with the second quarter of 1960, when sales slumped severely. We feel the first half of 1961 has a chance to end up about 5 to 7 percent behind the corresponding 1960 period.

Under anticipated conditions, normally I would project a year for major appliances about on a par with 1960, with the total reaching about 16 million units. Industry inventories are in much better control and balance.

But 1961 is not the usual year. The appliance industry enters another exciting period of growth and becomes part and parcel of a new industry — self-service dry cleaning. This development will have a dynamic stimulus on the appliance industry because units will be installed side-by-side with washers and dryers in a new self-service cleaning marketing concept. Since 1956 the number of coin-operated laundries has jumped from 4000 to 25,000, and now they represent appliance volume of more than 12 percent.

Sunbeam

new products to boost sales

by Louis W. Prestin,
Vice President, Marketing,
Sunbeam Corp.

WE LOOK FOR APPLIANCE SALES in 1961 to show an approximate five-percent increase above 1960.

Present indications are that shipments and sales of the company's traffic appliances, shavers and home tools for 1960 will match returns for the year earlier. We base our projections on sales rates with comparable periods of the previous year, plus other data related to retail levels.

Since our new products became available in September for sale in the ensuing year, dealers' sales have shown an upturn that we expect to continue in its present line up through 1961. Exciting new products are the life-blood of the portable appliance field.

Portable appliance sales follow the pattern of general consumer purchases, rather than the pattern of major appliances which resembles the pattern set by new construction of homes.

York

business — 2 for 1 by 1962

by J. B. Elliott,
President and Chief Executive Officer,
York Div., Borg-Warner Corp.

WE ARE IN THE DEPTHS of a recession . . . *if* you believe some of the headlines and listen to some of the professional crybabies. But I don't believe it — and I hope you don't believe it. The facts just don't jibe with some of the "poormouthing" that's going on.

The American consuming public has more to spend and save than ever before, and it's headed upward. Total personal income is now about $409 billion a year — nearly $24 billion higher than a year ago. Out of this $409 billion,

close to $50 billion will go directly into taxes and another $26 billion into personal savings. This still leaves a record $333 billion to be spent for goods and services. And it will be spent — at a rate about four percent higher than a year ago . . . . this is a queer recession.

What about business expenditures for plant and equipment? Spending during the third quarter of 1960 was at the rate of $37.5 billion, up from $35.2 billion during the first quarter and up from a rate of $32.5 billion for 1959 . . . . a most unusual recession, indeed.

I could go on and on. Retail sales are growing at *only* about $350 million a month, instead of the billion they hit during 1959. Exports are running well above a year ago and will probably set a new record.

Let's take the installed value of commercial and residential air conditioning — which should be around $1.5 billion for 1960. If our industry holds just the same rate of growth we're experiencing now, we should pass the $2 billion figure early in 1962, hit $2.5 billion by 1965, and be awfully close to $4 billion by 1970.

Look at it this way — for every $1.50 worth of current business, we can do $2.00 in 1962, $2.50 in 1965 and $4.00 in 1970. The *leaders* are the ones who are going to grow and profit. The average group may just get by and the below-average are going to fall by the wayside faster than ever.

We've got to drive, drive, drive on the one paramount factor of our economy: people have more money to spend but they are spending it for things that are sold to them in terms they understand and appreciate. We've got to talk in terms of comfort, convenience, health and prestige. We've got to make this great demanding public hungrier for air conditioning than they are for something else.

Westinghouse

a $6 million appliance order

by Mark W. Cresap, Jr., President, Westinghouse Electric Corp.

FOR WESTINGHOUSE, billings in 1961 are expected to show an increase for the fourth consecutive year, but the challenge to management — as in most industry during the coming year — will continue to be intense cost-price pressure on profits.

A decline in prices for appliances and most electrical equipment coupled with an increase in labor and material costs have greatly intensified the pressure on earnings. This adverse effect is evident in the fourth quarter of 1960, and will extend into 1961, although improvement is anticipated in the second half.

Efforts to ease the continuing profit squeeze will include increased research activity to accelerate development and marketing of new products as well as greater capital expenditures to improve operating efficiency.

Capital expenditures are expected to increase for the third consecutive year . . . with heavy emphasis on plant improvement programs and other cost reduction measures.

Research and engineering development expenditures will continue at a high level to increase scientific understanding and knowledge for future growth, bring new products to market and find better ways to manufacture all products.

Consumer purchases of appliances and electrical products for the home will equal or slightly exceed the industry's 1960 levels. As the home building market improves during the coming year there should be an upturn in appliance sales during the scond half of 1961. Further, the replacement market is growing for such lines as refrigerators and automatic washers. As this market continues to increase in the coming years, the appliance industry should be assured a proportionately larger annual volume.

The impact of new housing units on the appliance market is illustrated by a $6 million order awarded to Westinghouse. The company will provide more than 20,000 air conditioning, kitchen and laundry appliances for the 4500-home Belair suburb, near Washington, D. C., the first completely air conditioned community in the nation.

Mueller

a 25-percent increase in heat pump sales

by H. P. Mueller, Jr., President, Mueller Climatrol Div., Worthington Corp.

WE ANTICIPATE A GAIN of 25 percent in heat pump sales over record 1960 levels. Our forecast includes a 15-percent air conditioning sales increase in 1961 and a slight increase in furnace sales by mid-1961.

Kelvinator

"soaring sixties" become "sobering sixties"

by Homer L. Travis, Vice President, Sales, Kelvinator Div., American Motors Corp.

WE LOOK TO 1961 for a modest increase over 1960 — probably two to four per cent — plus additional stability in production, inventories and pricing.

Conservatism must rule any predictions about the immediate future of the major appliance industry because of the experiences of the past five years.

The first returns are in on the so-called "Soaring Sixties," and we might now change the forecast term to the "Sobering Sixties." It is evident that the appliance industry is not going to gain or hold its share of the consumer dollar by price-cutting.

Only by a return to reason and sound business practices is the appliance industry going to provide adequate profits to its producers and satisfactory earnings on investment to its stockholders.

The market for 1961 should be at least on a par with 1960 in terms of unit volume and might rise as much as four per cent on total major products. Profits should be better simply because we hope past experiences will be the guidelines for the future.

The long range outlook indicates that many factors are working in favor of the appliance industry.

It is a complicated industry in an intricate consumeristic economy. Variable factors such as area unemployment, discretionary buying power, international cold wars — all have their influence.

General economic forecasts — such as family formations, rising incomes, and housing starts — point toward continued sales increases in the mid-sixties and beyond. This data, however, does not rule out fluctuations over long periods. There can be some declines for individual years, and some serious slumps, too.

The appliance industry has reached a mature position on certain products that have been on the market for many years, such as refrigerators and washers. The growth products — dishwashers, disposers, room air conditioners and clothes dryers — will continue to increase sales and account for an increased portion of the discretionary buying power of consumers.

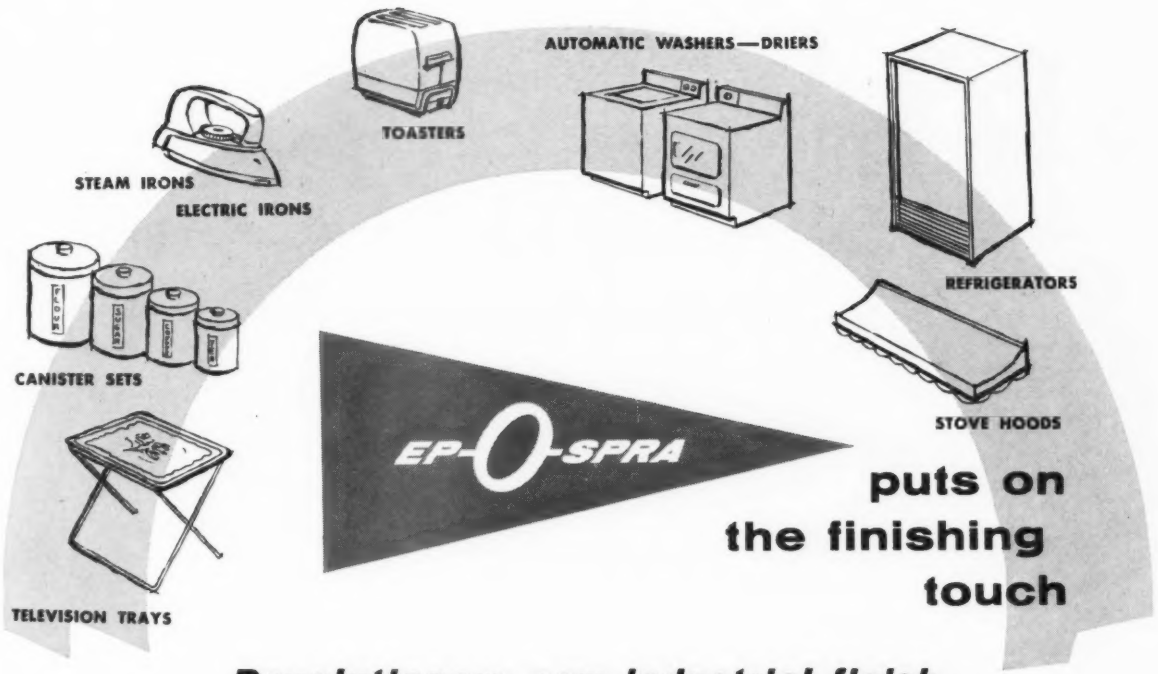
Frigidaire

four important factors

by Herman F. Lehman, General Motors Vice President and General Manager of Frigidaire Div.

(A PRESSTIME WIRE REPORT)

APPLIANCE INDUSTRY SALES in 1961 will be about the same as 1960, possibly better during the last half of the year than the first. Much will depend on the effectiveness of the industry's product sales and merchandising programs. The replacement market will be an important factor, considering that many appliances were purchased shortly after the war and are now nearing the end of their normal life expectancy. Also, the incorporation of truly meaningful features into appliance design can serve to stimulate customer interest in new products. Still another factor will be getting across to the customer that today's appliances are tremendous bargains. The consumer price index has risen 33 percent since 1947, but the index for major appliances has risen only about four percent.



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Binks' Rowe Honored

John E. Rowe, vice president and a member of the board of directors of Binks Mfg. Co., Chicago, was honored recently for his 25 years of service to the company, a leading designer and manufacturer of spray finishing equipment.

J. E. ROWE

At a December 15 dinner, Rowe was presented a diamond-studded engraved key by Burke B. Roche, Binks president.

In making the award, Roche praised Rowe for his contributions to Binks success and present position in the industry.

One-Day Seminar on Metalworking Marketing

A one-day seminar on metalworking marketing is being planned for February 13, 1961 at the Drake Hotel in Chicago, by the Chicago Chapter of the Association of Industrial Advertisers. The program chairman for the association is Harold Hayes, vice president, Fuller & Smith & Ross, Chicago.

The marketing program designed for metalworking executives (top management, sales and advertising) is being developed with the cooperation of the metalworking magazines serving the industry and coordinated by W. E. Schneider, advertising and sales planning manager, La Salle Steel Co.

It is planned to encourage attendance from the Twin Cities, southern Michigan, Wisconsin, western Indiana, Illinois and the St. Louis district. Anyone desiring additional information is encouraged to write to Mr. Schneider at La Salle Steel.

USS Installing Opened Coil Annealing for One-Coat Porcelain Enameling Sheets

Facilities for opened coil annealing of steel sheets for enameling, suitable for one-coat porcelain enamel applications, are under construction at U. S. Steel's Irvin Works, it was announced December 20. Initial production on the facility began last month and will increase to full capacity by mid-1961, as additional units are completed.

The U. S. S. report states: "The installation will provide the porcelain enameling industry with high quality steel sheets adapted to intricate forming operations and one-coat finishing when proper pre-treatment is used. Applications of this product are mainly in the manufacture of porcelain enameled household appliances, bathtubs, sinks and light reflectors.

Temco Industrial Division To Manufacture Launderamas

The Temco Industrial Div. of Temco Electronics and Missiles Co. has acquired the manufacturing rights as well as the tools, dies and production equipment from Forzeo Mfg. Corp. for the automatic, coin-operated 20-pound washer Model FZ-4. Temco is a subsidiary of Ling-Temco Electronics, Inc.

Extensive production facilities have been prepared and allocated to the Launderama manufacturing operation at the Temco Industrial main plant in Dallas, Texas. Production is expected to reach 50 per day by the middle of March. The firm reports that back orders for the equipment have grown to more than 2000.

Launderama parts and equipment were transferred to Dallas from the Forzeo plant in Anderson, Indiana.

According to the company, one of the most important features of the washer is its ability to handle twice the amount of clothes as the average coin-operated washer. It is also claimed that the Launderama uses 30 percent less utilities and requires 50 percent less maintenance than most home "commercial" type washers.

Ely Named AHLMA Chairman

Claire G. Ely, vice president, marketing, The Maytag Co., has been elected chairman of the board of the American Home Laundry Manufacturers' Association for 1961.

Simultaneously, Fred H. Holt, general manager, home laundry department, General Electric Co., was elected vice chairman of the board. Mason Smith, financial vice president, Whirlpool Corp., was elected treasurer of the association.

Ely replaces Homer L. Travis, vice president, Kelvinator sales, American Motors Corp., who has served as board chairman the last two years.

Ely, with Maytag since 1924, has been marketing vice president since September, 1957. He has served as a member of the association's board of directors since 1957. He is also chairman of the Home Laundry Conference committee, and a member of the advertising practices, annual meeting, finance & budget, government, membership and washer division committees.

The VDS-5000 Multiple Directional Control Valve is designed to fit together in an assembly of one, two, three, four or more pilot-operated valves, with another unit to keep the water heater vented to the atmosphere.

Pilot-control valve designed for vending applications

A NEW APPLIANCE SOLENOID VALVE designed expressly for tandem application in vending machines dispensing a variety of beverages has been announced by the Detroit Controls Div., American Radiator & Standard Sanitary Corp., Detroit, Mich. The valve, known as the VDS — 5000 Multiple Directional Control Valve, is designed to fit together in a battery arrangement. It is actually an assembly of one, two, three, four or more pilot-operated valves with an additional unit capable of keeping the water heater vented to the atmosphere, except when dispensing. The directional valves divert hot water for coffee, hot chocolate, tea, or soup concentrates.

Operating on the pilot-control principle to assure positive action, these valves incorporate waterproof and interchangeable epoxy encapsulated coils suitable for 50-60 cycle current and standard ac voltages. Coils are available with top or side spade terminals, or pigtails.

Listed by Underwriters' Laboratories, the new valves have brass bodies and are equipped with Buna-N rubber diaphragms, also available in Viton-A for high temperature applications. According to the manufacturer, they are based on a design proven during the past five years in home laundry equipment applications, and are suitable for use where water and high humidity are present.

Available for "gang" use on other equipment besides beverage vending machines requiring multi-directional control valves, the new valves are designed for use with ¼ inch barb hose, but may be adapted to other size inlet and outlet configurations. MPM

In COIN LAUNDRIES, too... porcelain enamel pays off big!

Long-time preferred finish for domestic laundry appliances, porcelain enamel is also proving its durability on coin-operated laundry equipment.

Higher water temperatures . . . stronger detergents . . . accelerated duty cycles . . . harder wear . . . place extreme demands on these finishes. And this is where porcelain enamel demonstrates its superior wearing qualities.

As an interior and exterior finish, porcelain enamel assures lifetime protection for laundry equipment, unaffected by alkalies, detergents, heat and moisture. And for interior and exterior *structural* surfaces it provides an economical lifetime finish . . . easily cleaned, good looking!

Ferro research and development leadership in porcelain enamel can provide the answer to problems involving use or application of porcelain enamel. Call or write for help on yours.

FERRO CORPORATION

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FERRO

At the end of the line, an automatic extractor pulls tops from the last press and releases them onto the incline shown. Some inspection is done at the incline, and some on a belt onto which tops are discharged, to insure quality.

Automated line

→ *from Page 43*

press from closing on two blanks. A shuttle loads the die and, in common with other automation, is interlocked with the press line. All presses function automatically.

Operations vary to suit the design of the top being produced but, in a typical case, proceed as follows: Dies in the first press then lance and draw the door well. Ejector pins lift the workpiece as the die opens and an air operated extractor moves the drawn part into the first transfer unit.

All the transfer units have guide rails along which workpieces are advanced. An air plunger moves the workpiece to an intermediate position on the rails. Some transfer units have four stations at which each workpiece comes to rest before the next advance. Others need only two stations. When trimming operations occur, transfer units are equipped with extensions on the carriage to remove trimmed scrap from the press bed.

In the second press die, the workpiece is then recessed or "picture framed", the center is restruck and all four sides are drawn to form a continuous flange around the periphery. After intermediate transfer, the workpiece is moved into the third die, where the center, front and back, and side trimming is done. After another advance, the fourth die trims off the four corners and extrudes a flange at the central hole. When transferred to the fifth die, a bleach dispenser hole and all top holes are pierced and a filter notch is cut.

In the sixth press, the lip of the extruded flange at the center hole is curled outward and the sides and corners are flanged by the action of a cam die. Components of this cam die are moved radially and then are retracted to clear the curled lip and flanged sides and corner. Then, the top is advanced to the seventh die, being also of the cam type, which forms the front and back flange edges. Transfer into the eighth and final die then occurs. There, hinge holes are pierced.

An air operated extractor unloads the final die. When the completed stamping is clear of the die, extractor jaws release the stamping and it slides down an incline onto a transfer belt along which final inspection is done. Stampings passing inspection are stacked by hand on skids, ready for shipment to other plants or for use in the St. Joseph plant.

Estimates place the investment in the new line at about $750,000. Two 300-ton presses are at the start of the line. Four of the remaining presses are 200-ton, and two are 150-ton. There are seven transfer units, one destacker and sheet loader, and one final extractor.

Thus, each blank fed from the stack and loader to the first press passes through eight press dies, 22 positions on the transfer units and out via the final extractor before sliding down the incline onto the inspection belt. Unless troubles arise, no workpieces passing through the line need be touched by hand. Direct labor is primarily that needed to see that automation acts as intended and that dies produce quality parts. Stacks have to be moved to the loader for the first press and finished parts require inspection and hand stacking on skids.

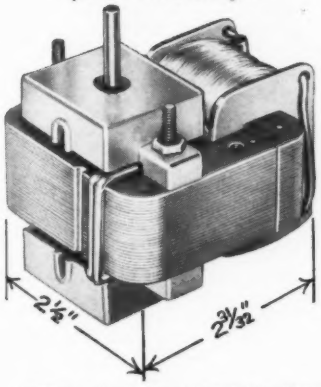
Because of the number of different tops to be run, and the need for keeping many different assembly lines supplied on schedule, it is expected that an inventory sufficient for about two weeks of assembly line needs will be required. Because of the high production rate and of the high flexibility of this automated top line, inventories can be held to a minimum at all three Whirlpool plants, thereby adding to the total cost savings realized by the new setup.——MPM

GENERAL INDUSTRIES

SMOOTH POWER

AC MOTOR

with extra large lubricant reservoirs for long range peak efficiency!



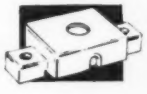
MODEL "H" 2-Pole, Shaded-Pole Motor 1/550 to 1/90 H.P., designed and constructed with features that assure thousands of extra hours of service under the most adverse operating conditions.

OIL CAPACITY MANY TIMES GREATER THAN CONVENTIONAL MOTORS

Oversized oil bearing reservoirs hold considerably more oil and wicking. A revolutionary new method of packing the wicking assures equal distribution of oil at all times resulting in quieter operation and longer trouble-free life.

DIE-CAST BEARING BRACKET

The new "H" motor design includes a rugged die-cast bearing bracket that insures permanent precision alignment and adds to the over-all durability.



Motors For All Types of Applications

1/1800 to 1/35 H.P.

See Our Catalog in SWEETS 7a-Gen S or write for copy

Quantity Price Quotation On Request

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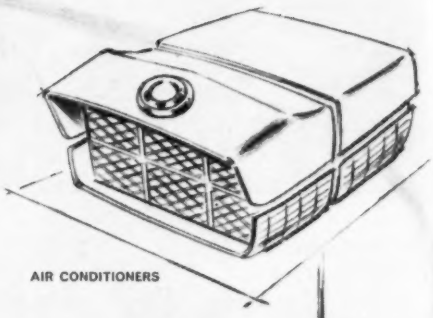
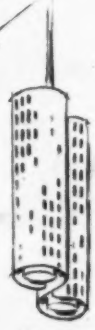
Idea! ...a world of inspiration with H&K perforated metals

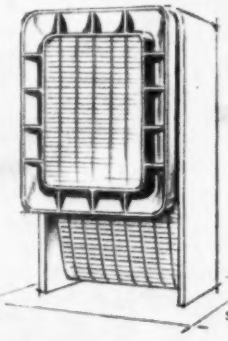
TAPE RECORDERS



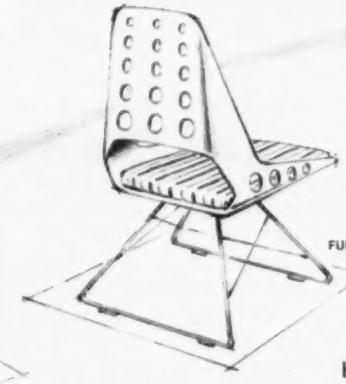
AIR CONDITIONERS



LIGHTING FIXTURES

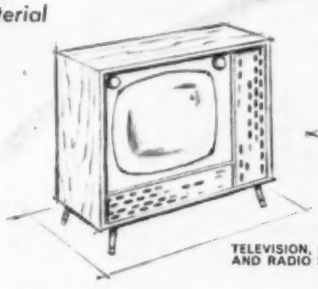


SPACE HEATERS



FURNITURE

Harrington & King can perforate the proper design, pattern and open area in practically any material available in coils, sheets or plates . . . from foil-thin to 1" thick.

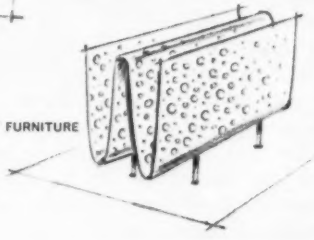


TELEVISION, HI-FI AND RADIO SETS

Metallic materials include steel, aluminum, stainless steel, brass, copper, monel, zinc, bronze, etc.

OFFICE FURNITURE AND EQUIPMENT

Non-Metallic materials include plastic, wood, composition, paper, cloth, etc.



NOVELTY FURNITURE

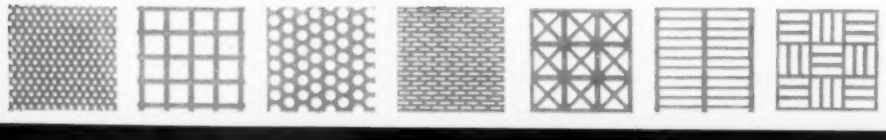
For more than 75 years, Harrington & King has helped to broaden the horizons of industrial design through the imaginative creation of exciting perforated patterns in both metallic and non-metallic materials.

Whether for functional or decorative use—or both! — the appropriate motif for almost every application is available from our vast selection of existing dies . . . at no charge for tooling. Or, if necessary, tools for special designs will be made to order.

H & K sales engineers will be pleased to work with you on your perforating requirements.

Mail coupon to nearest H & K office—today!

Just a few of the many H&K patterns are illustrated—in reduced size.



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MPM

new supplies and equipment

Heavy Duty Metal-Cased Limit Switches

Designed for ease of installation in metal conduit wiring systems, the KL series of heavy duty, precision limit switches provides for right hand or left hand mounting, easy removal of basic switch for connection outside the metal

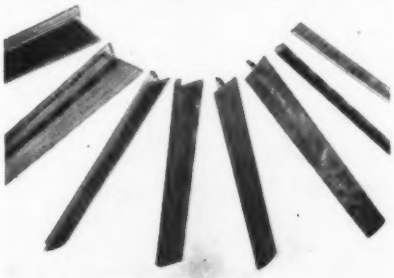
case, and O-ring-sealed side plate and neoprene boot-sealed operating plunger for protection against dust, oil, condensation or moisture.

The basic switch used in the KL series is the Type 2HL-5, listed by Underwriters' Laboratories, Inc. for single-pole, double-throw operation at two horsepower 250 volts ac, one horsepower 125 volts ac, 20 amperes 125 volts ac. The basic switch is secured on two precisely-located mounting studs inside the case so that switch mounting is independent of case mounting.

Write for Catalog No. 30-1 to Dept. MPM, Unimax Switch Div., The W. L. Maxson Corp., Ives Rd., Wallingford, Conn.

Plastic Trim Mouldings

A line of woodgrained finished plastic trim mouldings in over 150 different stock cross sections is now available. These mica finishes have been added to the current line of brass, copper, chrome and gold metal-like mouldings.



In addition to woodgrains, the mouldings are also available with marble, speckled or glitter patterns to perfectly match the finish of any high pressure laminate, such as Formica, Weldwood, Micarta, Panelyte, Pionite, Marlite, Nevamar, etc. Special effects that combine a metal finish with any pattern, giving an unusual decorative two-tone moulding, are also being produced.

Write for literature, samples and application instructions to Dept. MPM, Glass Laboratories, Inc., 863 65th St., Brooklyn 20, N. Y.

Alkaline Rust Remover

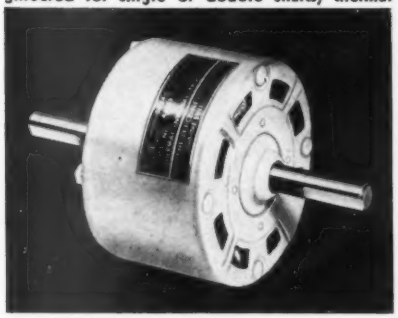
Development of a non-acid, non-flammable rust remover that removes rust, carbon, scale and paint from ferrous metals without the dangers of hydrogen embrittlement or dimensional tolerance loss has been announced.

Called Alkaline Rust Remover, the product removes heavy rust and stubborn paint deposits such as red oxide primer, baked lacquer, acid-proof paint, and asphalt finishes, by means of a simple one-tank operation followed by a pressure rinse. The remover contains no cyanide compounds and emits no corrosive fumes.

Write Dept. MPM, Turco Products, Inc., 24600 S. Main St., Wilmington, Calif.

Fractional Horsepower Motors

A series of 2, 4 and 6-pole shaded pole and 6-pole split capacitor motors has been announced for fractional horsepower applications. The motors can be wound for 115, 208 or 230-volt operation at 50 or 60 cycles, and can be engineered for single or double shafts, thermal



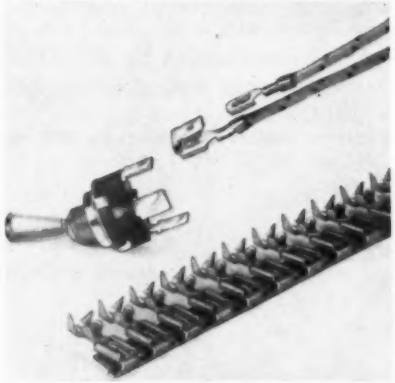
protectors, special mounting rings, terminals or other features to fit individual motor package needs.

Smallest in the line is a 35-watt, 2-pole shaded pole motor rated at 3,000 rpm and 1/150 hp at 115 volts, 60 cycles. Largest in this series is a 6-pole permanent split model rated at 1/3 hp and 1,075 rpm.

Write Dept. MPM, Leece-Neville Co., 989 Athens St., Gainesville, Ga.

Double Duty Connector

The double duty quick-connect terminal #3000H21AB provides multiple connections to the same terminal. It incorporates space saving features, and simplifies wiring of electrical

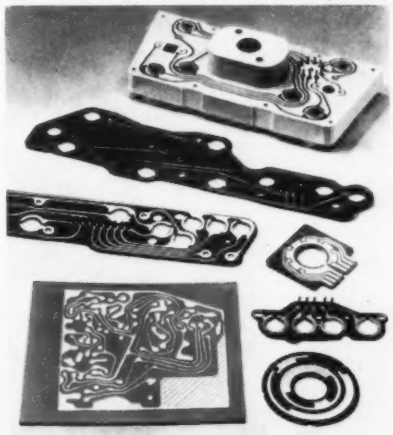


equipment. Basically, this is a female connector for attachment to the male terminals normally furnished on many switches, timers, motors, sockets, relays, solenoids, transformers and junction boards. This connector also incorporates an integral male terminal to which another female connector or double duty connector can be attached.

Write Dept. MPM, Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.

Die-Stamped Circuits

Die-stamped circuits that combine economy with reliability in mass production applications have been announced. The circuits are made by die cutting the conductor pattern from metal coil coated on one side with a thermoresponsive



adhesive and simultaneously bonding the circuit to the insulating base material under heat and pressure. Use of long wearing dies permits production runs of approximately four million circuit boards without die change and while maintaining tight tolerances on the circuit.

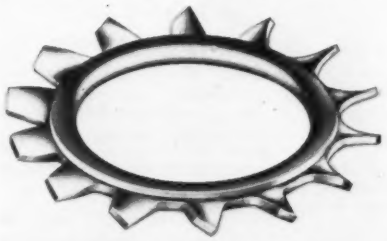
These die-stamped circuits are now being mass-produced for a wide variety of automotive, appliance and control applications, and are gaining acceptance for use in instruments, computers, television sets, and other products requiring electronic and electrical circuitry.

Write for Bulletin No. D1 to Dept. MPM, Dytronics, Inc., 115 Main St., Rochester, Mich.

Folded Rim Lock Washer

A folded rim lock washer has a double strength rim to meet the requirements of assembly work involving high torque and tensions. It can also be used in sealing applications to eliminate thread leakage under high pressures and temperatures as high as 500° F.

The washer's added strength has been built in by turning back and crimping the inside



diameter, thereby concentrating the load on a double-layer rim. This strengthening of the lock washer resists extreme fastening stresses, and prevents slipping or creeping during tightening.

A full line to match screw sizes from 5/16 inch to 5/8 inch is available. A selection of testing samples can be obtained by writing to Sales/Service Dept., Shakeproof Div., Illinois Tool Works, St. Charles Rd., Elgin, Ill.

Metal Forming Lubricant

Phosphatherm RN, a metal forming lubricant for use at temperatures between 1100 and 2200° F., has been announced. Developed by a large steel manufacturer in Germany, the lubricant is said to prevent galling, scoring and metal pickup when forming most types of common steels, steel and copper alloys, and the exotic metals at elevated temperature.

The lubricant is an eutectoid, a gradually

INTERLOX...

a better, lower cost, easily controlled phosphate coating that **LOCKS** *your finish to the metal.*

Interlox's unusual cleaning ability and radically different type of accelerator produce an even, fine grained, dense coating that literally locks an organic finish to the metal.

Interlox gives you the ultimate in appearance, adhesion and corrosion resistance—no streaks, stains, powdery residue or flash rusting to complicate your production. Interlox baths are unusually long lived and require less replenishment and control.

Extra cleaning power is easily obtained at any time by the addition of a low-cost detergent only. This avoids the danger of over-phosphatizing by the costly practice of adding complete phosphatizing compound when only cleaner is needed.

There is an Interlox product to meet your particular requirements, whether spray or immersion type, single or multiple stage.

Licensed Manufacturers { **Alert Supply Co., Los Angeles, California**
Armalite Company, Ltd., Toronto, Canada

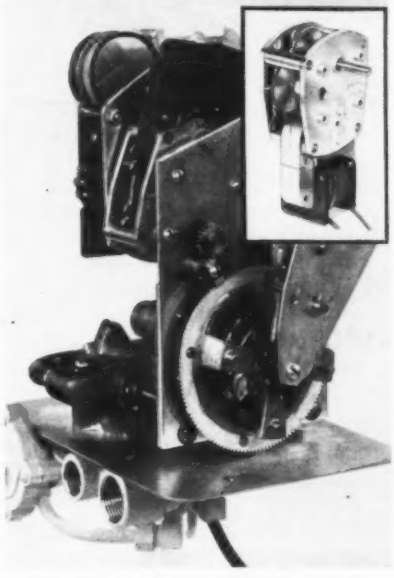
NORTHWEST CHEMICAL COMPANY
9310 ROSELAWN **DETROIT 4, MICHIGAN**

softening mixture of certain phosphates and other salts. On sufficiently hot surfaces it forms an adherent, spreading melt having excellent lubricity on both forming tools and materials being formed, especially alloy steels.

Write for Bulletin 130 to Dept. MPM, The Alpha-Molykote Corp., 65 Harvard Ave., Stamford, Conn.

Model S Motor

Small size, long life and high torque capability are among the reasons for the selection of this firm's Model S motor as an integral part of an ingenious electric brain in one manufacturers' water softener. One of a line of 30 small



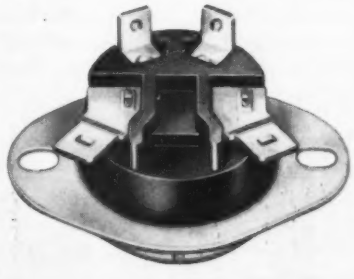
electric motors and gear motors, the motor accurately positions a 4-way valve which controls various operations during regeneration cycles. Backwash, brine feed, brine rinse and return-to-service functions are carried out for predetermined lengths of time, at prescribed rates of flow, for most efficient water purification and softening.

Write Dept. MPM, Brevel Products Corp., 601 W. 26th St., New York 1, N. Y.

Disc-Type Appliance Thermostat

The application of a line voltage heater built into a small thermostat has been announced. The Klixon 20450 Series thermostat with internal heater is designed primarily for control systems in appliances.

One use is found in clothes dryers where input to the built-in heater is varied by an ad-

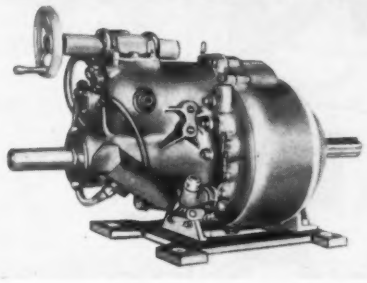


justable switch to influence the natural response of the thermal element to ambient temperature. This provides a means of control for damp dry or full cycles.

Write Dept. MPM, Spencer Products Group, Texas Instruments, Inc., Metals & Controls Div., 34 Forest St., Attleboro, Mass.

Variable Speed Hydraulic Transmission

A variable speed hydraulic transmission has been introduced that is said to permit low cost automation and modernization of existing ma-

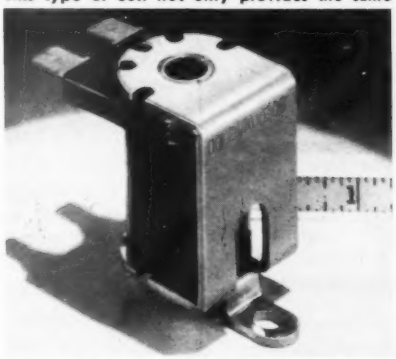


chinery, as well as development of new equipment to increase production and lessen cost. The unit provides infinitely variable speeds from 0 to 1600 rpm for high-torque, heavy duty applications such as machine tool drives, conveyors, lifts and hoists, blowers, test racks, experimental and laboratory work, etc.

Write Dept. MPM, Roberts Electric Co., 849 W. Grand Ave. Chicago 22, Ill.

Nylon Encapsulated Coil

A development in solenoid valve coils has been announced. Coils formerly enclosed by a metal can are now encapsulated with nylon. This type of coil not only provides the same

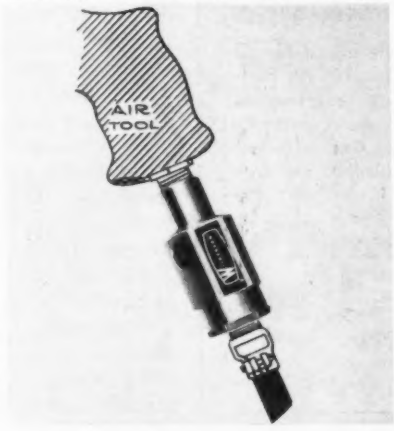


electrical performance, but gives an even higher mechanical and electrical strength. It is also more impervious to moisture than was the metal can coil first introduced by the firm.

Write Dept. MPM, Appliance Controls Sales, The Dole Valve Co., 6201 Oakton St., Morton Grove, Ill.

Hose Line Oiler

A small, extremely light hose line oiler for use with portable air tools has been developed



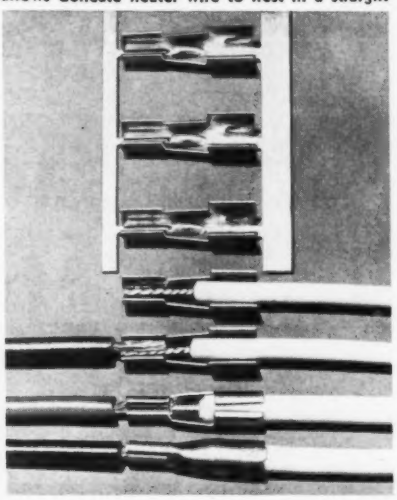
and placed on the market. The lubricator mounts in any hose line with 1/4 or 1/8 inch P. T. connections.

Constructed of aluminum, the hose oiler has a one-ounce reservoir which holds enough lubricant for an 8-hour shift on an average production line air tool. The oiler lubricates in any position, no matter how the tool is being used, and the reservoir can be filled while the air pressure is on. In operation, the unit produces a fine oil mist and needs no adjustments.

Write for Circular #1025 to Dept. MPM, Wilkerson Corp., 1745 W. Girard, Englewood, Calif.

Wire Connector

A splice connector for joining heater wire to stranded wire has been announced. The design allows delicate heater wire to nest in a straight



line position so that it doesn't get fractured, resulting in an open circuit.

The connector will accommodate heater wires from .085 to 1.25 OD and stranded wire sizes from 14 to 18.

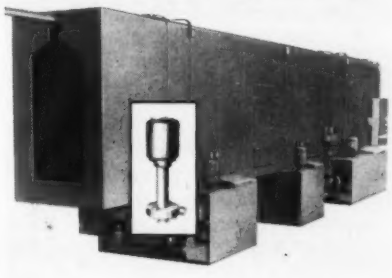
High speed electric machines are available from the manufacturer for crimping the continuous strip connectors as fast as an operator can handle the wires.

Write Dept. MPM, Berg Mfg. Corp., Truon Div., New Cumberland, Pa.

Spray Washing Equipment

Exclusive reliance on heavy duty, vertical, packless pumps at the heart of its modular power spray washing equipment is said to assure users lower initial investment and operating costs and sharply reduced downtime losses.

Design of the unit overcomes the most frequent cause of pump breakdown: solution attack on packing seals of externally mounted hori-



zontal pumps and resulting external washer leakage. Because the entire pump is submerged and packless, there can be no leakage. Vertical placement eliminates motor damage by solution spray.

Write Dept. MPM, Ramco Equipment Corp., 1379 Lafayette Ave., New York 59, N. Y.

MORE THAN A METAL— IT'S A METHOD!

American Nickeloid Pre-Plated Metals * Save 25% or More on Material Costs!!!

Three out of five manufacturing operations eliminated!

NO PLATING
American Nickeloid metals come to you already beautifully plated, ready for fabrication and assembly!

NO CLEANING
With Nickeloid's pre-plated finishes, you eliminate time-consuming operations and handling required in job plating.

NO POLISHING
The use of Nickeloid pre-plated metal erases a whole department and costly process from your fabrication schedule.

AMERICAN NICKELOID pre-plated metals are made in sheets, strips or coils, in bright or satin finishes, with platings of chromium, nickel, brass or copper on base metals of steel, zinc, copper, brass or aluminum. Smart patterns including stripes and crimps also available. But why not see for yourself? We will be pleased to send you our free Introductory kit.

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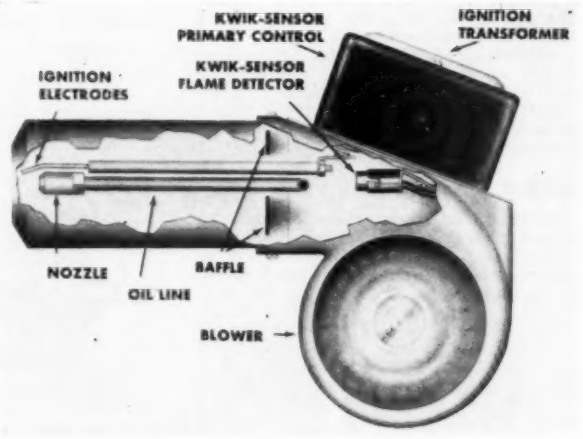
Peru 11, Ill. • Plants: Peru, Ill., and Walnutport, Pa.

Sales offices in all principal cities



Burner-mounted primary control uses new-type flame detector

A NEW BURNER-MOUNTED PRIMARY CONTROL for domestic oil burners that features split-second reaction to the oil flame has been announced by the White-Rodgers Co., St. Louis, Mo.

Called the Kwik-Sensor, the control consists of two parts, a flame detector and a primary unit. The flame detector is of new design and reacts only to the radiant rays from the oil flame, and not to heat. This permits mounting at the blower end of the burner, where it operates in a cool, clean atmosphere unaffected by soot, dirt or excessive heat. No adjustments or relocation of the flame detector are necessary even though the burner may be used in different types of furnaces or boilers having various types of combustion chambers. The primary unit can be mounted anywhere, in or on the burner, in the furnace vestibule, or in any other convenient location.

The flame detector provides instantaneous response to both flame ignition or extinction, but does not react to the radiant heat of a red hot combustion chamber or the ignition spark. There is no time lag while awaiting heat buildup or dissipation, thus providing quicker acting, safer control.

The manufacturer emphasizes that this is not an electronic device, but rather a control consisting of a new flame detector which operates standard primary control components familiar to any serviceman. There are no vacuum tubes, amplifiers or transistors.

The unit can be installed by the burner manufacturer, using a standard bracket, in a matter of minutes. The detector need only be positioned where it can pick up the radiant rays of the oil flame. Since heat is not a factor, flame or draft variations do not cause false shutdowns or lockouts. Because of its blower-end location and its small size, it does not interfere with the primary air pattern nor the servicing of nozzle, electrodes and other burner parts.

Other advantages cited for the burner manufacturer include; better factory control over final burner performance, and pretesting of complete package to assure uniformity and maximum effectiveness of installation.—MPM

General Steel Wares Moves

General Steel Wares, Ltd., has moved its main office from 75 Miranda Ave., Toronto, to 199 River St., Toronto, according to S. J. Randall, president of the distributing firm.

Creativity Awards Announced

Inauguration of a new product and invention compensation plan for Consumer and Technical Products Div. engineers of Waste King Corp., Los Angeles, was recently announced.

Under the new plan, monetary awards will be considered for engineering personnel and others, excluding company officers, "who either alone, or jointly with others, and in a manner which is clearly beyond the scope of their assigned activities and responsibilities, originate new product and/or service programs for the corporation which are adopted and pursued profitably."

Marketing Functions Merged

John V. Youngblood, vice president-marketing, Bastian-Morley Co., Inc., has announced that marketing activities of Bastion-Morley and its subsidiary company, H. C. Little Burner Co., Inc., have been combined.

The newly formed marketing organization will handle the sales of a line of products known as Basmor-Little. Included in the line are gas and oil-fired boilers, gas and electric water heaters, gas furnaces, gas wall heaters, recessed gas wall heaters and floor furnaces, and gas incinerators.

Don Johnston, formerly with General Electric, has been named national sales manager of the new marketing organization.

BKI in Membership Drive

An extensive drive for members has been launched by the Better Kitchens Institute. Sandford Curtiss, public relations counsel and executive secretary of the Steel Kitchen Cabinet Manufacturers Association, has been appointed BKI manager.

Armco Adopts New Trademark

Adoption of a new identifying trademark and standardization of the corporate signature have been announced by Armco Steeel Corp. According to Logan T. Johnston, president, "The new mark modernizes our 46-year-old inverted triangle, and gives visual expression to Armco's growth during the past 60 years through research, improved operating procedures and aggressive merchandising."

The "new look" will be introduced in all advertising and promotional activities of the corporation, starting this month.

Logan T. Johnston (seated, president of Armco Steel, and W. B. Quail, vice president-distribution, examine reproductions of their company's triangular-shaped trademark dating back to 1914. New trademark is in background.

Vitroglass Corp. Purchased

Lamb Industries has announced the purchase of Vitroglass Corp.

Vitroglass was founded in 1955 as a separate company by the principals of the Challenge Stamping & Porcelain Co., Grand Haven, Mich. Major products of Vitroglass are porcelain enameled water heater tanks and porcelain enameled steel plumbing fixtures. The White Div. of Lamb Industries was the sole purchaser of the water tanks.

Universal Match Installs Automatic Merchandisers

The first commercial installations of Universal Match Corp.'s new 36-item automatic merchandiser, which accepts $1 and $5 bills as well as coins, were recently announced.

A bank of six merchandisers recently began vending a wide variety of merchandise to the public at Rich's in Atlanta, Ga., largest department store in the South, and three more will be put into operation soon by Montgomery Ward & Co. at separate locations.

The merchandiser, which was developed jointly by National Rejectors, Inc.,

Laundry and Cleaners Allied Trades Association Meeting Draws 350

Carl S. Hulen was elected president of the Laundry and Cleaners Allied Trades Association at the group's annual meeting November 16-18 in Hollywood, Fla.

Other officers elected include L. S. Smith III, vice president; John C. Clement, secretary; Nils S. Dahl, treasurer; and William J. Bucklee, assistant treasurer.

The annual meeting drew approximately 350 persons representing leading manufacturers and distributors of equipment and supplies presently being sold to the laundry and cleaning industry.

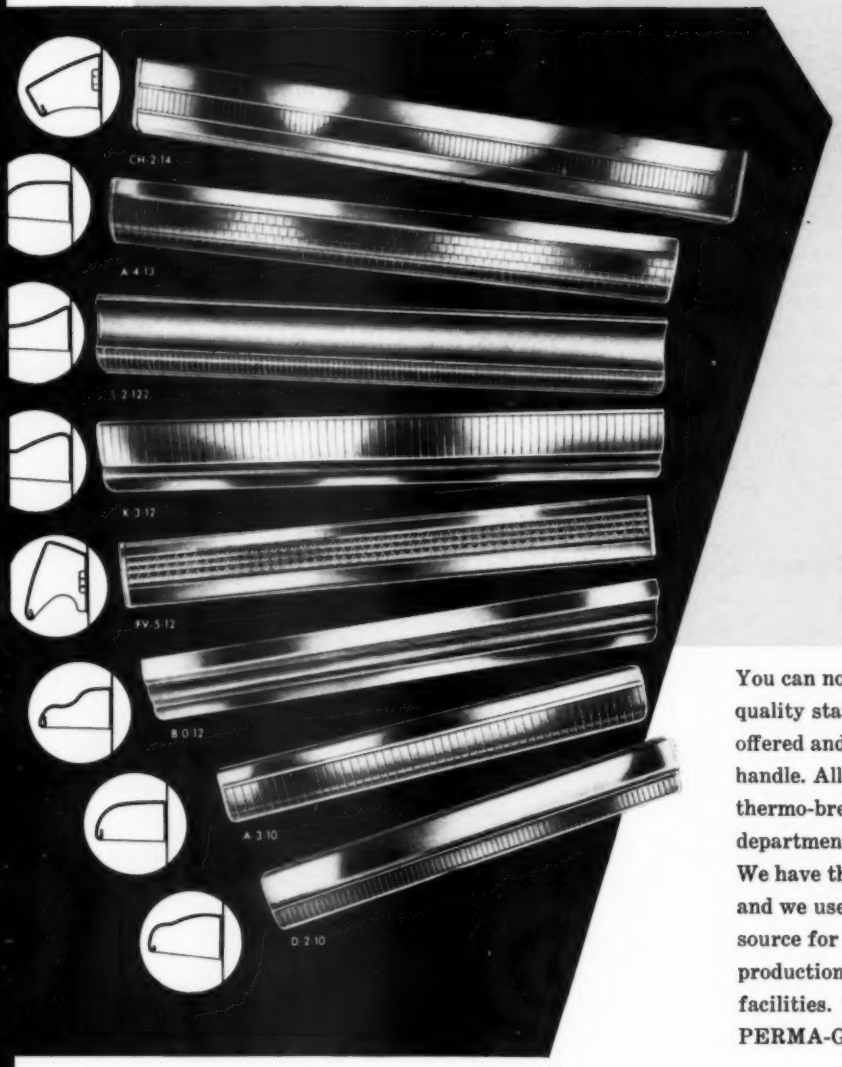
Emphasis at the meeting was placed on selling products on their merits rather than using gimmicks, give-aways, or other considerations which would not contribute to the product's quality or the firm's service to the purchaser.

All LCATA members were urged to support on a voluntary basis the recommended code of ethics and house policies of the association.

The business portion of the meeting was devoted to a wide range of subjects including dry cleaning and laundry coin-ops, industry exhibits, distributor-manufacturer relations, results of operating cost surveys, better industry credit conditions, more effective selling and marketing, public relations, publicity and advertising, and other major programs of national customer associations.

Among the principal speakers were Ray Vermeers of the National Institute of Drycleaning, W. E. Hawk of the American Institute of Laundering, Robert J. Dobson of the National Association of Institutional Laundry Managers, and Herbert K. Beshar of the National Institute of Rug Cleaners.

(From left) William J. Bucklee, chairman, major supply manufacturers committee; John K. Clement, chairman, major machinery manufacturers committee; Edmund Harding, humorist; and Carl S. Hulen, newly elected president.

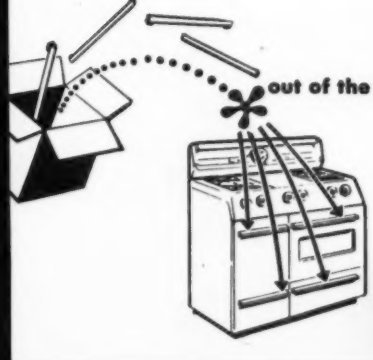


PERMA-GRIP® handles

You can now purchase your appliance handles built to Mills' quality standards. Twelve standard models are offered and six standard patterns are available on any model handle. All handles have plastic spacers which serve as a thermo-break. If you wish, consult with our engingeering department regarding special custom requirements. We have the skilled personnel, the specialized equipment, and we use the right materials to assure a reliable source for quality PERMA-GRIP handles. Let our specialized production lines serve as a part of your sub-assembly facilities. Phone or write us for complete details on PERMA-GRIP handles.

Dixie Products, Inc.

is a Mills customer of long standing. The Dixie range shown at the right is equipped with PERMA-GRIP door handles. It is also equipped with the universally accepted PERMA-VIEW oven door window, another engineered product of Mills Products, Inc.



MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

and National Vendors, Inc., both Universal Match subsidiaries, had its initial public test at Macy's in New York City last summer.

"This is the beginning of our intensive market testing of this new machine under actual shopping conditions in selected locations," said John L. Wilson, president of Universal Match.

Universal Match also announced a production program covering 2000 automatic currency acceptance and change-making devices for use in a variety of self-service ticket vending machines. The announcement was made jointly by Wilson and M. Mac Schwebel, of Universal Controls, Inc.

Called Vendaticket, the machine has been accepted for installation soon in a first-run house of a leading motion picture chain. In addition to this application, Vendaticket is now being further developed for use in the sale of bus and railroad tickets, admissions to stadiums, recreation parks and the sale of insurance by vending machines.

Hi-Press Acquires D-H

Hi-Press Air Conditioning of America, Inc., has acquired the assets of the Drayer-Hanson Div. of Crane Co. The Drayer-Hanson Div., with its headquarters and plant in Los Angeles, is one of the nation's leading manufacturers of low-side air conditioning components and also produces a line of refrigeration, heating and heat transfer equipment. Drayer-Hanson was acquired by Crane Co. when it purchased the assets of National-U.S. Radiator Co. early last year.

Hi-Press designs and manufactures "an advanced system of noiseless and draftless air conditioning employing small diameter piping for the high-velocity distribution of the conditioned air."

CISFM Elects Officers at Annual Meeting

A. M. Latta was elected president of the Canadian Institute of Stove & Furnace Manufacturers at their annual meeting in Montreal. He is sales manager of Enamel & Heating Products Ltd., Sackville, N. B.

E. H. McKinney, general manager of Engineering Industries Ltd., Toronto, was elected vice president.

The Institute is a trade section of The Canadian Manufacturers Association.

An urgent plea for more backbone in management's labor relations was delivered by E. F. L. Henry, general manager of Canadian Management Services. His address was an examination of man-

THE BRIGHT TOUCH
BY PYRAMID
ADDS THE RIGHT TOUCH
TO YOUR SALES!
Pyramid sparkling stainless trim adds the *right* touch that means the difference at point of sale! From simple trim to complex frames, Pyramid's wide line of metal mouldings can help you put the sale across by providing the *extra* spark that means *extra* sales.
Economical, too. Individual frames, for example, can be tailored from standard sections—providing originality at little or no tool cost. Or intricate rings can be roll formed in endless spirals—eliminating waste, yet holding close tolerances.
And if your needs are special, you'll find you'll do much better working with specialists. Pyramid has specialized in making metal mouldings for over thirty years.
Why not put this experience to work for you—today!
Pyramid Mouldings Inc.
5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.—BRONXVILLE, NEW YORK
WESTERN MOULDINGS INC., 1111 EAST 8TH STREET, UPLAND, CALIFORNIA

agement's general attitude to union demands throughout various areas of labor relations activities. Many managers, Henry said, failed to make use of the prerogatives granted them in existing legislation and, by default, are thus led into the position of giving way to more of the demands than are necessary.

In addition, a panel discussion was presented on the growth and marketing techniques of the electric heating industry.

U. S. Porcelain Purchased

Norris-Thermador Corp. has purchased for cash the assets of U. S. Porcelain Enamel Co., Vernon, Calif. U. S. Porcelain, whose annual sales exceed $2 million, manufactures a line of street name and traffic signs, stamped steel plumbingware and porcelain architectural panels, does contract porcelain enameling. The company will be operated as a division of Norris-Thermador.

NWAHACA Retains Officers

All four of the executive officers of the National Warm Air Heating and Air Conditioning Association were re-elected for 1961 at the trade group's annual meeting in Cleveland recently.

Named to head the association again during 1961 was Harry C. Gurney of Columbus, Ohio, general sales manager, Janitrol Heating and Air Conditioning. Continuing in his post as first vice president is Don Winegardner, vice president of the heating division, The Majestic Co., Inc., Huntington, Ind.

Harold P. Mueller, Jr., president of the Mueller Climatrol Div. of Worthington Corp., Milwaukee, was re-elected second vice president of the association. James M. Martin of Cleveland was re-elected secretary-treasurer. Martin also serves as the managing director of the association, which maintains its national offices in Cleveland.

Fairmont Aluminum Expands

A $10 million expansion program at the Fairmont Aluminum Co. rolling mill in Fairmont, W. Va., is progressing on schedule, and is expected to be in operation sometime in the spring of 1961. The firm is a subsidiary of Cerro de Pasco Corp.

The Fairmont expansion, designed to increase coil and sheet aluminum production nearly 150 percent, will give the plant a yearly capacity of 66 million pounds of aluminum, as compared with the present 25 million pounds. The expansion will also enable the firm to increase the width of its sheet by 100 percent — from the present 36-inch maximum width to 72 inches. In addition, the facility will be able to produce aluminum sheet in heavier and lighter gauges, ranging downward from ⅛-inch thick to .006 inch in a wider range of alloys than is presently available.

Tokyo Firm to Manufacture Caloric Gas Appliances

Gas appliances designed and engineered by Caloric Appliance Corp. will soon be in production in Tokyo. Under the terms of a licensing agreement between Kanto Gas Appliance Co., Ltd., and Caloric International, S.A., overseas arm of Caloric, appliances will be designed by Caloric to the special needs of the Far East market and built by Kanto. The American firm will also provide technical advice on mass production techniques, and may, if necessary, license certain appliance patents.

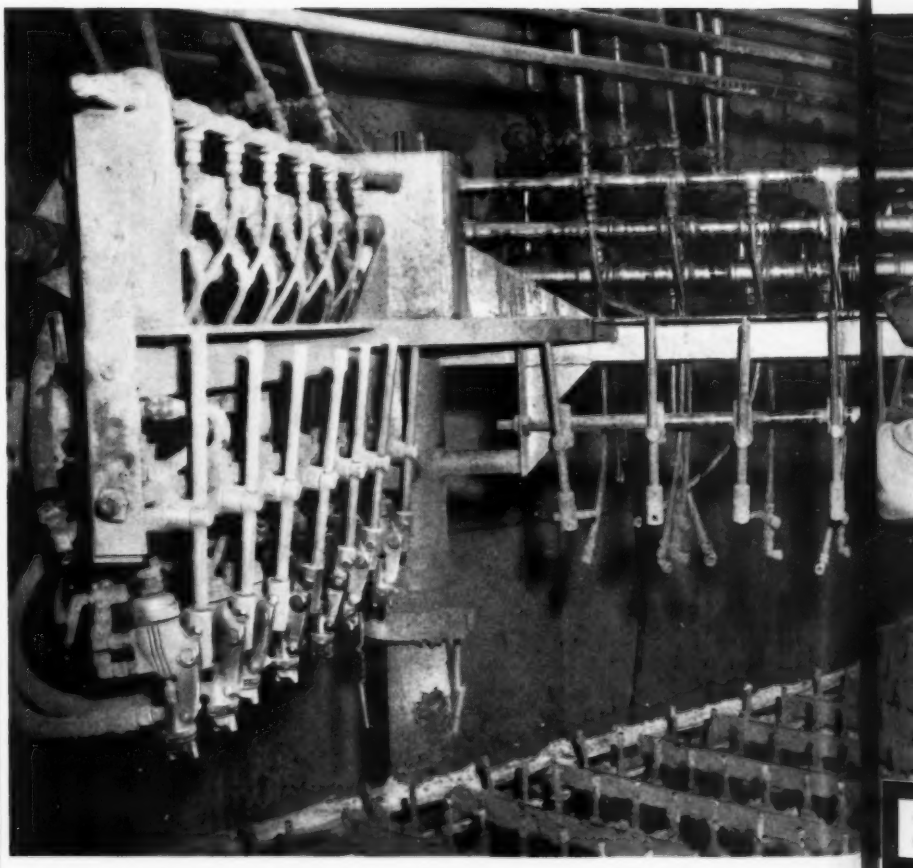
The Tokyo firm will manufacture the appliances and distribute them in the key market of Japan and in Korea, Taiwan, Singapore, Hong Kong, Okinawa, and the Phillipines.

Thermoelectric Refrigeration Contract to Whirlpool Corp.

The Research Laboratories of the Whirlpool Corp., St. Joseph, Mich., have been awarded a contract by the United

At Stran Steel Co., Terre Haute, Indiana...

color change-over timed



Two horizontal arms, each with 7 mounted spray guns, turn on a shaft. Colors are changed simply by moving the arm into position with clean guns for a new color. This automatically swings other 7 guns that have been in production free of the line for cleaning. Change-over requires only 3 minutes.

States Navy Bureau of Ships to develop and fabricate a prototype thermoelectric refrigeration system for the frozen and chilled food storage spaces of a new class of nuclear submarine. The system will be based on previous studies and experimental developments in thermoelectric cooling successfully completed for the Navy under previous contracts.

Whirlpool has been conducting research in this electronic heat pumping process for over four years. Cooling or heating results from a phenomenon known as the Peltier effect, discovered by a French scientist over 100 years ago. As an electric current is passed through a loop of dissimilar materials, a flow of electrons results, causing one of the junctions in the loop to become warm while the other junction becomes cool. Reversal of the current causes a reversal of the effect, i.e., the hot junction cools and the cool junction becomes warm.

NESA Sponsors Competition

The 15th annual electric sign design competition sponsored by the National Electric Sign Association is being devoted to restaurant signs. The contest, which closes January 15, offers awards totaling $1000.

Previous competition has concentrated on improved sign advertising for motels, banks, industrial plants, supermarkets, drugstores and shopping centers. Judging is based on contributions to sign design, advertising and identification value, architectural harmony and practicability.

Lawson Buys Water Heater Line

Wilson Brothers has announced that its subsidiary, Lawson Mfg. Co., has purchased the Hoffman Water Div. of Clayton and Lambert Co.

Lawson manufactures gas and electric water heaters for domestic, commercial and industrial uses. Hoffman, with facilities occupying 90,000 sq. ft. at Louisville, Ky., will operate as a division of Lawson and will increase Lawson's facilities by 60 percent.

Wilson Brothers manufactures a line of industrial air compressors and gas and electric glass-lined water heaters for residential, commercial and industrial use. It is also engaged in engineering and research, the design, fabrication and erection of highway bridges, the manufacture of textiles, and the manufacture of high-strength, fabric-reinforced plastics.

Service Centers Expanded

Universal-Cyclops Steel Corp. has expanded its specialty steel service center program to assure faster deliveries of stainless bar and wire, and tool and die steels.

Included in the firm's expansion is an enlarged and modernized facility at Bridgeville, Pa., plus new or enlarged facilities at Titusville, Pa., Chicago, Cleveland, Detroit, New York and Worcester, Mass.

AOS to Install X-ray Unit

What is reported to be the world's most powerful X-ray machine of its type — specifically designed for radiography in the metals industry — will be installed at the A. O. Smith Corp.'s Milwaukee, Wisc., plant next spring.

The eight million electron volt linear accelerator is being built for the company by High Voltage Engineering Corp. of Burlington, Mass.

The linear accelerator, or "linac," is designed to "see" through steel more than a foot thick and to furnish photographic proof of the soundness of such metal structures as core barrels for nuclear reactors and high-pressure vessels for the petro-chemical industry.

Fixture Manufacturers Form Porcelain On Steel Council

An association to promote "porcelain on steel" plumbing fixtures has been formed by fixture manufacturers. The

neduced to 3 minutes

600 feet of synchronized equipment at Stran Steel Co. scrubs, bonds, washes, cures, applies and bakes the finish on formed metal roof and sidewall panels. Incorporated in this array of automation is a considerable amount of Binks equipment . . . spray and wash booths, guns, high pressure pumps and other automatic units.

At one place in the line, a Binks high-speed rotary spray gun unit (consisting of 8 mounted spray guns) applies a uniform finish coat to all edges of the configurated sheets. And here's the remarkable feature in this operation . . . panel surfaces, flanges and radii are all finished to the precise mil thickness required.

This is just one of many ways Binks equipment meets particular requirements on the finishing line at Stran Steel. You, too, can have a time and material saving finishing line engineered to your particular needs. No matter what your product, or how complicated the finishing process, Binks has the engineering knowhow and the right finishing equipment to streamline your production.

Why not talk it over with a Binks engineer . . . it doesn't cost a penny and it may save you thousands of dollars.

Ask about our spray painting school
Open to all . . . NO TUITION . . . covers all phases

SPRAY GUNS

AIR COMPRESSORS

NATIONWIDE SERVICE

Binks
EVERYTHING FOR SPRAY PAINTING

Binks Manufacturing Company
3148 Carrol Ave., Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

Porcelain On Steel Council is the first association to represent this segment of the plumbing industry exclusively.

It will operate as an independent council, but is affiliated with the Plumbing Fixture Manufacturers Association "to strengthen the entire industry and to eliminate duplication of effort."

The Council has two membership divisions: the Manufacturers and Marketers Div. membership consists of porcelain enameled steel plumbing fixture manufacturers — more than 20 firms have indicated their support; raw material producers are being invited to join the Suppliers Div.

Here is the Council's outline of primary objectives:

1. An active association program to benefit the entire enameled steel plumbing fixture industry and related industries.
2. An aggressive promotion program to publicize the benefits of enameled steel fixtures. This program will be directed toward plumbing contractors, builders, architects and home buyers.
3. Steps to reduce freight rates for shipping enameled steel fixtures and to develop a more equitable freight procedure.
4. Collection and dissemination of statistics about the production and shipment of fixtures.
5. Establishment of adequate quality standards and the simplification of product lines.
6. Close liaison with government agencies and other segments of the plumbing and building industry. PSC's charter meeting was held November 1 in Chicago.

1960 Porcelain Enamel Institute Shop Practice Forum

The 22nd annual Porcelain Enamel Institute Shop Practice Forum was held recently at the University of Illinois, Urbana. Group photograph was taken on steps of University auditorium. See Forum report on page 39.

Detroit Controls Buys Firm

Acquisition of Rochester Mfg. Co., Inc., Rochester, N. Y., by American Radiator & Standard Sanitary Corp., N .Y. has been announced.

The Rochester company will be operated as part of the Detroit Controls Div. of American-Standard. Rochester is a leading producer of liquid level, pressure and temperature indication gauges and instruments. The firm presently employs over 350 persons. Its sales volume approximates $5 million.

Whirlpool Gets New Symbol

The Whirlpool Corp., which got its name from the whirlpool action of its washing machines, now has a whirlpool as its official corporate identity symbol.

Purpose of the changes, says Whirlpool Vice President Robert B. Willemin, was to "produce a symbol that could be geometrically represented, would utilize the similarity between the company name and a familiar natural phenomenon, maintain public recognition already achieved, connote progressiveness and quality, and lend itself to economical reproduction." The new symbol will be used on all RCA Whirlpool appliances, advertising, and company forms.

RWMA Reports High Shipments

Factory shipments of resistance welding equipment in October were "well in excess" of $2 million, according to recently compiled statistics of the Resistance Welder Manufacturers' Association. October was the ninth consecutive month in which shipments have exceeded this mark.

For the first ten months of 1960, shipments were 18½ percent ahead of the similar period in 1959, even though October dropped behind the September 1960 figure.

Controls Co. Creates R&D Staff

A newly organized corporate research and development staff will carry out basic and applied research projects for Controls Co. of America. The group will be headquartered in the firm's new facilities at 4200 N. 124th St., Wauwatosa, Wisc.

The objective of the group, according to President Louis Putze, is to carry out research on new ideas which can become the basis for product development projects for the various divisions and subsidiary companies.

NO arc flash . . . no arc shielding
NO gas or water lines
NO special rods

No Other Gun Like it

Here's a shock-proof, fool-proof, labor-saving welding gun for shop or assembly line that spots or welds from one side. For welder or mechanic — **the only gun that bonds stainless or dissimilar metals using stainless steel or conventional steel electrodes.** The NO-ARC gun is easy to use . . . is rugged and dependable . . welds 30-gage or heavy plate without arc flash. Operates on AC or DC.

NO-ARC
EQUIPMENT COMPANY
321 Academy Street, Newark, New Jersey

Send for free bulletin M-1

MPM
personals

Robert L. Wehrli, vice president and general manager of **Robertshaw-Fulton's Aeronautical and Instrument Div.** since 1956, is moving to Richmond, Va., to serve as vice president and assistant to the president of the corporation.

H. Kenneth Foute has been elected president of **Drake Mfg. Co.** The firm specializes in miniature lighting, indicator lights, panel lights, miniature lampholders, etc.

Charles S. LeCraw, Jr., has been appointed to the position of assistant to the director in the market development division of **United States Steel Corp.** He held various jobs in the engineering and construction field prior to joining United States Steel in 1955 as manager-building and construction industries, market development division.

Ken C. Tucker, formerly manager of food industries division of **Oakite Products, Inc.,** has been named assistant sales manager of the firm, which manufactures specialized chemical compounds for industrial cleaning and metal treating. He will report to William A. Baltzell, vice president and sales manager.

The appointment of **Denison Neale** as vice president in charge of marketing, **Denison Engineering Div., American Brake Shoe Co.,** has been announced by Paul W. Norris, Denison engineering president. In his new position, Neale will continue to be responsible for all Denison marketing activities.

Detrex Chemical Industries, Inc. announces several major management promotions in their industrial sales division. They are: **Gordon A. Jacobs,** sales manager, industrial division; **Paul W. Moehle,** product manager, industrial solvent sales; and **Bruce A. Young,** product manager, industrial equipment sales.

Herbert D. DeBorde has been appointed director of manufacturing for **Burroughs Corp.** As assistant to J. R. Bradburn, vice president-manufacturing and engineering, DeBorde has direct authority to act on behalf of the vice president within the manufacturing area to expedite the scope of work of the division. He continues to carry responsibility as general manager of Control Instrument Co., a Burroughs subsidiary.

WEHRLI

BLOY

FOUTE

SNIDER

LECRAW

SCHUPBACH

TUCKER

KNECHT

MOEHLE

HARGRAVE

YOUNG

JACOBS

Fritz Bloy has been appointed sales manager of refrigeration products by **Wall Tube and Metal Products Co.,** Newport, Tenn. He was formerly associated with the Bundy Tubing Co. of Detroit, Mich. In his new position he will be responsible for sales of wire and tube condensers, evaporators and freezer shelves to the original equipment manufacturers throughout the country.

A. Joe Snider, former Cleveland district sales manager of **Fairmont Aluminum Co.,** has been named assistant to W. Bradley Blair, vice president of sales. He has been with Fairmont since 1949. The company also announced the appointment of **Paul E. Jones** as manager of the Chicago sales district.

Valeron Corp. has announced the managing personnel of the firm's new Press Brake Div. in Addison, Ill. **Glen Schupbach** will be general manager, **Nicholas Gron,** chief engineer, and **Albert Pilz,** chief engineer.

Frank W. Knecht has been appointed vice president in charge of the newly-merged public and industrial relations department of **Sharon Steel Corp.,** it has been announced by James A. Roemer, Sharon board chairman and chief executive officer. Knecht was previously general manager of the Brainard Steel Div. of the corporation in Warren, Ohio.

Delbert A. Hargrave has been named vice president of operations for **Avenco,** manufacturer of coffee-chocolate venders and coin changers. The appointment was announced by Gilbert Totten, president of the Minneapolis-based company.

Walter J. Gans, Jr. has been named sales manager of the Warehouse Div. of **Reynolds Aluminum Supply Co.** In his new capacity, he "will direct the efforts of the company's general product group in promoting the sale of metals and building products."

John K. McGuire has been appointed manager of transportation sales and national accounts for **The Glidden Co.'s Paint Div.** In his new capacity he will be responsible for both trade and industrial national accounts and will coordinate his activities with Glidden regional directors and sales managers.

Lawrance W. Wightman has been appointed assistant to the vice president in charge of operations of **Emerson Electric Manufacturing Co.** He will be responsible for manufacturing research and development for the firm's Commercial Div., which produces fractional hp

WHITER THAN NATURE'S WHITEST

PORCELAIN ENAMEL

FRIT

If a fresh snowfall is your idea of whiteness, Hommel Tite-Wite is whiter than white . . . dazzling in its purity. With Hommel Tite-Wite, color uniformity is assured. Every bag is quality-controlled, your guarantee of a perfect application every time.

The secret of Hommel whiteness is quality raw materials and pioneering research. This unbeatable team also gives you these added advantages: lower production costs, versatility for drain, dip or spray application, permanent alkali and acid resistance, improved scratch and thermal shock resistance. Let your local Hommel representative show how Hommel research works for you.

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HOMMEL

MPM-161

motors, lighting, ventilating, heating and cooling appliances for homes and commercial establishments.

American Motors Corp. President George Romney has announced a realignment of top executives. **Roy D. Chapin, Jr.,** executive vice president and general manager of the automotive division, will be executive vice president responsible for fiscal and international activities in both the automobile and appliance fields.

Bernard A. Chapman, executive vice president and general manager of the appliance division, will be executive vice president responsible for all automotive and appliance manufacturing, engineering, styling and procurement. He is also a director of the corporation. **Roy A. Abernethy,** vice president of distribution and marketing-automotive, has been elected executive vice president responsible for automobile and appliance distribution and marketing. He was also elected a director of the corporation.

In addition, **John W. Raisbeck,** assistant to the president, has been elected vice president, sales operation. **Richard T. Purdy,** treasurer, has been elected vice president and treasurer. **Donald P. Else,** comptroller, has been elected vice president and comptroller. **Homer L. Travis,** vice president in charge of Kelvinator sales, continues as head of the domestic appliance sales organization.

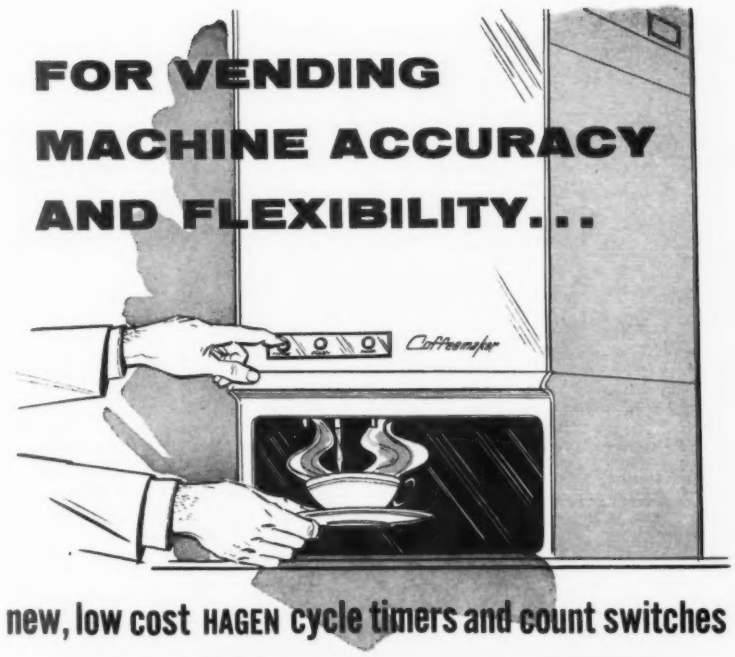
ABERNETHY

CHAPMAN

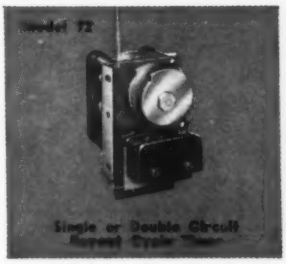
GOETTNER

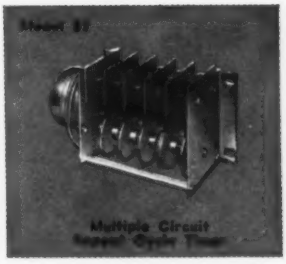
CHAPIN

H. W. Tuttle & Co. has announced the appointment of **Fritz Goettner** to be in charge of new product development. Born in Germany, Goettner completed his formal education in that country, including the Engineering Academy in Stettin. *(More Personals on Page 79)*

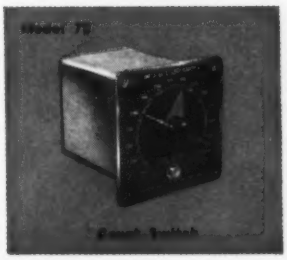


new, low cost HAGEN cycle timers and count switches





These new HAGEN time and count devices make possible continuous program control over a wide range of cycles as required in the operation of your vending machines. Powered by "time-tested" HAGEN synchronous motors, these devices can be supplied to operate in hundreds of standard combinations or they can be custom-designed to your specifications.



HAGEN dispensing controls can also help control your production costs. Initial cost is low . . . helping you maintain a competitive price on your equipment. And the superior construction of HAGEN controls means less maintenance, far fewer field returns.

Write for FREE bulletins on HAGEN time and count devices . . . the low cost, high quality controls for vending machines and commercial appliances such as dishwashers, water softeners and dry cleaning equipment. Address Dept. MPM-161

BLISS HAGEN MANUFACTURING DIVISION / BARABOO, WISCONSIN
Of The Gamewell Company
AN E. W. BLISS COMPANY SUBSIDIARY

LONG
AND
STRONG...

Continuous hinges by NATIONAL LOCK

Build recognized quality into your products with continuous hinges by National Lock. Neat, attractive and strong! Load is distributed evenly for greater bearing capacity, lasting ease of operation. Choose from a wide variety . . . equal or unequal wings, with springs or without, parallel or staggered holes, swaging to suit your needs. In steel, brass, stainless or aluminum. Precision-built by National Lock. Write for catalog today.

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NATIONAL LOCK COMPANY • ROCKFORD, ILLINOIS
INTERNATIONAL DIVISION
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CABLE: ARLAB

SOLVE IT WITH PATENTED STAMPED STEEL PORCELAIN ENAMELED BURNERS

Offer Proven Performance . . . Economy

Millions Used by Manufacturers in the United States and Foreign Countries

- No drilling or tapping necessary
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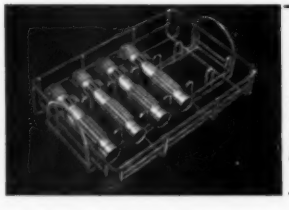
- Smooth, non-resistant interior
- Light weight
- Ready to install
- Raised 5/8 inch ports
- Ideal for commercial, industrial, and domestic heating appliances, water heaters and laundry dryers

For Information Write or Phone
SAMUEL STAMPING & ENAMELING CO.
Burner Division — Chattanooga, Tennessee

PUT PARTS HANDLING ON A LOW COST BASIS

EEZY STAK®
BASKETS

You can process parts for less money than it's costing you now by using Eezy-Stak parts handling baskets! Eezy-Staks have the exclusive patented "Inter-Lok" handles for convenient, compact stacking and storage. Parts handled safely . . . less risk of damage . . . rejects reduced. *Two types—compartmented baskets for segregated parts handling, open mesh type for bulk handling.* May be zinc-plated, plastic or neoprene-coated.



WRITE TODAY FOR BULLETIN B-57

Wire and Iron Products Inc.
1712 Sixteenth Street
Detroit 16, Michigan

The election of **John S. Ayres** as president of the **Cook Paint & Varnish Co.** has been announced by **L. G. Backstrom,** chairman of the board who, at the same time, announced his own retirement as president. Ayres, who has been a vice president of the company in charge of industrial sales, will assume the new duties immediately.

Backstrom also announced the election of **Harold B. Fisher** as vice president and treasurer.

McMAHON

AYRES

Concurrently, the appointment of **C. F. McMahon** as marketing vice president of the firm was announced by Ayres, new president of the company.

Edward B. Maire, formerly general manager of **Robertshaw-Fulton's Mairco Div.,** Goshen, Ind., has taken over new duties as general manager of Robertshaw's **Bridgeport Thermostat Div.,** Milford, Conn., and assistant vice president of the corporation.

Portus M. Wheeler has been named vice president and general manager of **Indiana Steel Products Div., Indiana General Corp.** The appointment was made by John H. Bouwmeester, Indiana General's executive vice president.

MAIRE

WHEELER

John W. Eder, Jr., has been appointed general sales manager of **Chicago Eye Shield Co.** He was formerly assistant sales manager.

Chicago Vitreous Corp., a division of the Eagle-Picher Co., has promoted three men to the position of vice president, according to an announcement by Chicago Vitreous President A. S. Ault. **Harold M. Flye, Leroy A. Johnson** and **Harry J. Van Dolah** were made vice presidents

JOHNSON

DONALDSON

ANDERSON

WHITE

FLYE

VAN DOLAH

of the porcelain enamel frit and porcelain enameled steel service station manufacturer.

Flye was made vice president-comptroller after serving in the capacity of comptroller since March 1957. Johnson is now vice president-frit sales and service. He has been associated with Chicago Vitreous since 1937. He was formerly manager of frit sales and service. Van Dolah is vice president-frit research and development. He has been director of research since 1957.

Three additional promotions were announced by L. A. Johnson: **William L. Donaldson** was named district manager for the Illinois, Michigan, Wisconsin, Minnesota territory; **Lee C. Anderson** becomes eastern district manager; and **James I. White** was named service engineer for the southern territory.

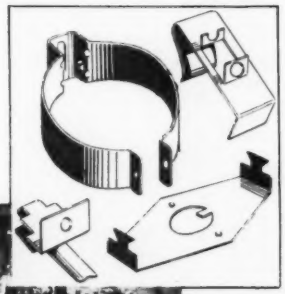
Donaldson was with George D. Roper Corp. as a chemical process engineer before joining Chicago Vitreous in 1947. Before his current assignment he served as eastern district manager. Anderson first joined the porcelain enamel industry as a trainee with Vitreous Steel Products Co. in 1932. He joined Chicago Vitreous in 1935, and was later named enamel department superintendent for Ervite Corp. In 1947 he was appointed service engineer for Chicago Vitreous.

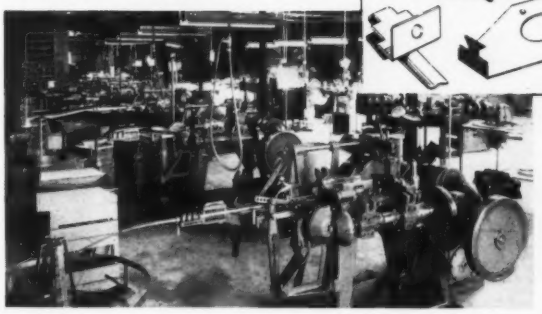
STANLEY

SPRING MANUFACTURING COMPANY

FOUR SLIDE

for the little "extras" that count so much





A complete line of specially designed and equipt Four Slide machines to produce the many intricate metal stampings and wire forms requiring more than one simple operation. The attached drawings are illustrations of just a few of the complex metal stampings and forms developed by Stanley Spring Manufacturing Company craftsmen on the Four Slide machines.

Plus . . . the little "extras" brought to you in know-how . . . experience . . . dependability. All products of Stanley Spring Manufacturing Company. All yours in every spring, wire form or stamping we produce for you.

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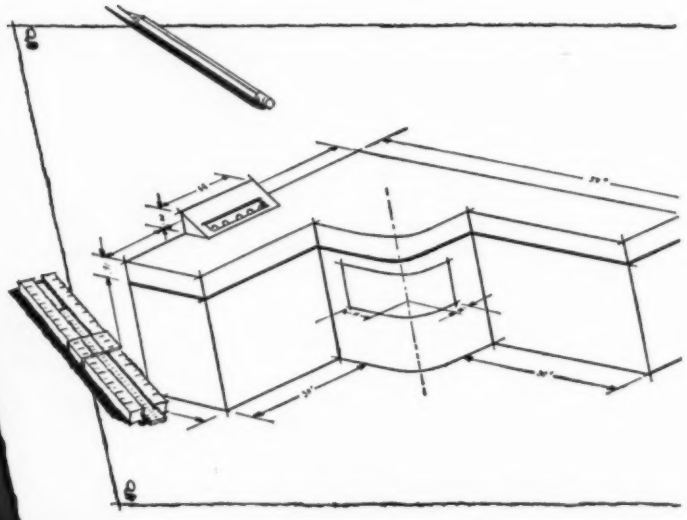
LOW
TEMPERATURE
(1400°-1450°F. RANGE)
ALKALI
RESISTANT

Frits by Pemco

ESPECIALLY
SUITABLE
FOR HOME
LAUNDRY
EQUIPMENT

PLAN TO TAKE
ADVANTAGE
OF THE DOLLAR
SAVINGS THAT
ARE POSSIBLE



You can depend upon your Pemco sales engineer to help you work out procedures that will enable you to use new Pemco Low Temperature Frits and thus get a substantial net saving per unit.

FIFTY YEARS OF RESEARCH AND A FLAME

PEMCO CORPORATION
BALTIMORE 24, MARYLAND

HIGH QUALITY PORCELAIN ENAMEL FRITS AND COLORING OXIDES

Gas-Fired Infra-Red Burner

A 4-page data sheet on a new gas-fired infra-red burner is now available. The data sheet contains application data and performance curves for evaluation, selection and specifications.

The burner was designed specifically for low temperature industrial processing applications, such as drying metals, drying porcelain enamel frit, paint and enamel baking, and drying fabrics. Infra-red radiant heat emission of the new burner is concentrated in the 2.0 to 4.0 micron band, the wavelength at which most materials have maximum heat absorption. The patented burner is designed for optimum heat transfer efficiency (maximum radiation intensity at minimum fuel input).

Write Dept. MPM, Bryant Industrial Products Corp., 17700 Miles Ave., Cleveland 28, Ohio.

Porcelain Enameled Aluminum

Porcelain enameled aluminum is the subject of a new 6-page supplement to "Lead in the Ceramic Industries" published by Lead Industries Association. Containing up-to-date information on the chemistry and properties of these lead bearing enamels, the supplement is designed to give the potential producer of porcelain enameled aluminum products information on what these enamels are and what they will do. Also covered is the diverse and growing list of uses of this product.

Copies of the supplement are available both separately or in the book "Lead in the Ceramic Industries" by writing to Dept. MPM, Lead Industries Association, 292 Madison Ave., New York 17, N. Y.

Catalog on Electrostatic Paint Systems and Equipment

Availability of a new 8-page illustrated catalog describing centrifugal-type electrostatic paint spray systems and equipment has been announced. Bulletin 100 explains the limitations of conventional electrostatic spray equipment; then discusses the technique of atomization by air and centrifugal force, and the subsequent use of electrostatics to charge and guide pre-atomized particles of coating materials.

Write Dept. MPM, Ionic Electrostatic Corp., 111 Monroe St., Garfield, N. J.

Unipunch Unitized Tooling

A brochure describing and illustrating the cost-saving and production economies of Unipunch Unitized Tooling in presses and press brakes is available. Comparative costs between conventional dies and Unipunch hole punching and notching units are described.

For your copy of the brochure, write Dept. MPM, Punch Products Corp., 370 Babcock St., Buffalo 6, N. Y.

Power Press Catalog

Publication of a 2-color, 8-page catalog featuring the Press-Rite power press line from 2 through 85-ton capacity has been announced. The catalog features the new 55-ton and 70-ton presses. Both are available with Airflex air friction clutch and air-applied brake designed for long, maintenance-free life.

For your copy, write Dept. MPM, Havir Mfg. Co., Inc., 444 Cleveland Ave., St. Paul, Minn.

Brochure on Pearl Pigments

A complete technical brochure covering properties, typical uses and general procedure concerning the applications for pearl pigments is now available.

The brochure is in color and contains general discussion concerning the problems of orientation and techniques, types available and other pertinent data.

Write Dept. MPM, Rona Pearl Corp., Div. of Rona Laboratories, Inc., E. 21st St. and E. 22nd St., Bayonne, N. J.

Projection Welding Low Carbon Steel

A 20-page brochure, "Projection Welding Low Carbon Steel with Embossed Projections," gives detailed information on projection welding techniques, projection forming tools, welding electrodes and joint design.

Projection designs and welding techniques are found to vary with the thickness of the steel. Specific recommendations cover welding of projections embossed in thicknesses from .011 inch to .245 inch. Macrophotos trace the development of a projection weld under different conditions. Drawings show design of tools for forming the recommended projection shapes for best production results. Special electrode and tool designs are described to best accept commercial variables normally present in mass production.

For information on how to get your copy of Bulletin SP-27, write to Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.

Two Brochures on Motor-Compressors

Two brochures, covering specifications and performance data of new four and six-cylinder motor-compressors, have been published. The models, introduced recently, extend the horsepower range of low-temperature applications from 5 hp to 7½ and 10 hp. The high temperature range is increased from 10 through 30 hp.

Both presentations illustrate complete physical specifications, features and capacity and performance data in low and high temperature ranges.

For Forms No. 6001 and 6006, write Dept. MPM, Copeland Refrigeration Corp., Sidney, Ohio.

Phosphating Reference Chart & Technical Data Bulletin

After a six-month customer survey of the phosphate coating market, this firm built an iron phosphate process to the exact specifications called for. A booklet, along with a phosphate reference chart and technical data bulletin, is now available which explains the process, called Paintite. Some features of the process include: superior cleaning, temperature versatility, low foaming, less post rust, no white streaking, economy, etc.

For information on how to procure your free copy of the chart and bulletin, write Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.

Cycle Timers and Count Switches

A bulletin on time and count devices for continuous program control over a wide range of cycles as required in the operation of vending machines, dishwashers and water softeners is available.

Powered by synchronous motors, these devices can be supplied to operate in hundreds of standard combinations or they can be custom-designed to your specifications.

Write Dept. MPM-1260, Hagen Mfg. Div., Baraboo, Wis.

Automatic Spray Machine

A brochure is now available on a whirling gun automatic spray machine which continuously whirls two opposing guns or holds them in fixed position for the painting of round, deep-draw, and intricately designed parts with diameters up to 15 inches. The brochure also describes another automatic spray finishing machine which incorporates the chain-on-edge principle for painting

to Page 85 →

ARI

→ *from Page 25*

aware of the program's existence, and about half of them are using it in their selling efforts." Berg reported.

Serfass takes office

R. K. Serfass, manager of Westinghouse Electric Corporation's Air-Conditioning Div. at Staunton, Va., was elected president of ARI. In his acceptance speech he pointed out the goals for the coming year. He outlined four basic objectives: financial, marketing, engineering, and general (or administrative).

Financial objectives include:

1. Increased profitability for the entire industry through a greater awareness of the present position.

2. Consolidation with other trade associations in the industry to reduce overall costs to individual companies by eliminating duplication of effort.

3. Pursuit of revision of tax laws to offset the high cost of research and development.

4. Discipline in the conduct of ARI affairs to accomplish objectives at the lowest possible cost.

Marketing goals include:

1. Dissemination of a maximum amount of statistical information on market trends within the industry, measured by shipment of products.

Rudy Berg, vice president of Copeland Refrigeration Corp., and retiring president of ARI, delivering the annual report of the president.

2. Promotion of the benefits of air-conditioning and refrigeration as the industry competes with others, such as automobiles, travel, recreation, escalators, and lighting.

Engineering objectives outlined were:

1. Continuing emphasis on standards which represent the industry consensus on product designs of acceptable quality.

2. Continuing emphasis on certification to assure achievement of quality design.

General or administrative goals detailed by Serfass included:

1. Encouragement of sections in their various projects.

2. Growth in membership.

3. Greater emphasis on refrigeration activities.

4. Development of trained installation and service personnel.

New officers

Other officers elected at the meeting included three vice presidents: Russell Gray, vice president of Carrier Corp.; L. N. Hunter, director of engineering, Crane Co.'s Plumbing, Heating and Air-Conditioning Group; and F. J. Kreissl, president, Detroit Controls Div., American Radiator and Standard Sanitary Corp. W. H. Aubrey, president, Frick Co., was named treasurer.

In addition to the officers, four new directors were named by ARI. They are: Cecil Boling, president and treasurer of Dunham-Bush, Inc.; Joseph B. Elliott, president, York Div., Borg-Warner Corp,; L. P. Benua, executive vice president, Ebco Mfg. Co.,; and J. G. Landrigan, general sales manager, United Wire and Supply Corp.——MPM

DRY-SYS FINISHING SYSTEMS

FOR SUPERIOR DESIGN AND PERFORMANCE

Every installation has its individual problems, be they plant conditions, production methods, space limitations, or other factors.

Drying Systems' engineers are trained and experienced in determining the best solution for each need.

Let us discuss your finishing system requirements, and make recommendations, submitting layouts and quotations. No obligation, of course.

OVENS • WASHERS • PAINTING EQUIPMENT
AIR MAKE-UP SYSTEMS • CONVEYORS
QUALITY AUTOMATED SYSTEMS

Bulletin G-1 illustrates our activities. — Sent on request.

Small jobs are as welcome as large ones. In contrast to large ovens, the picture above shows a 5 compartment batch oven, electrically heated, with separate temperature control for each compartment.

DRY-SYS Equipments CHICAGO

DRYING SYSTEMS CO.

ENGINEERS • MANUFACTURERS • CONTRACTORS

DIVISION OF THOR POWER TOOL CO.

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MPM

industry meetings

NATIONAL

HOME FURNISHINGS
International Home Furnishings Market, American Furniture Mart and Merchandise Mart, Chicago, Ill., January 6-14, 1961.

HOUSEWARES
The National Housewares Manufacturers' Association's 34th National Housewares Exhibit, McCormick Place (Lakefront Exposition Center), Chicago, Ill., January 16-20, 1961.

SHIPPING CONTAINERS
Steel Shipping Container Institute, Inc.'s Winter Meeting, St. Regis Hotel, New York City, N. Y., January 17-18, 1961.

MAINTENANCE & ENGINEERING
The 12th Annual Plant Maintenance & Engineering Show, International Amphitheatre, Chicago, Ill., January 23-26, 1961. (Show; January 23-26: Conference; January 23-25.)

ELECTRICAL ENGINEERS
American Institute of Electrical Engineers Winter General Meeting, Statler-Hilton Hotel, New York City, January 29 - February 3, 1961.

STEEL CABINETS
Steel Kitchen Cabinet Manufacturers Association Midwinter Meeting, Sheraton Towers Hotel, Chicago, Ill., January 31, 1961.

PLASTICS
The 16th Reinforced Plastics Division Conference, Edgewater Beach Hotel, Chicago, Ill., February 7-9, 1961.

HEATING, REFRIGERATION
The American Society of Heating, Refrigerating & Air-Conditioning Engineers' Semi-annual Meeting, Conrad Hilton Hotel, and Exposition, International Amphitheatre, Chicago, February 13-16, 1961.

METALS EXPOSITION
The 12th Western Metal Congress and Exposition, Ambassador Hotel (technical sessions) and Pan-Pacific Auditorium (exhibits), Los Angeles, Calif., March 20-24, 1961.

PRESSED METAL
Pressed Metal Institute's 1961 Spring Technical Meeting, New York City, N. Y., March 22-24, 1961.

GAS APPLIANCES
The Gas Appliance Manufacturers' Association's Annual Meeting, Boca Raton Hotel and Club, Boca Raton, Fla., April 13-15, 1961.

HOME LAUNDRY
The American Home Laundry Manufacturers' Association's 1961 Convention, Boca Raton Hotel and Club, Boca Raton, Fla., April 16-18, 1961.

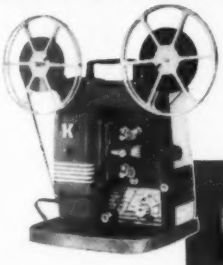
WELDING EXPOSITION
The American Welding Society's Annual Welding Exposition, Coliseum, New York, April 18-20, 1961.

SECTIONAL

GAS APPLIANCES
The Gas Appliance Engineers' Society (Midwest Chapter) Meeting, Mickleberry Restaurant, Route 30, Chicago Heights, Ill., January 19, 1961.

ENAMELERS
The Midwest Enamelers Club Meeting, LaSalle Hotel, Chicago, Ill., January 21, 1961.

KEYSTONE CAMERA
Relies on
RANSBURG
No. 2 Process
Electrostatic Spray Painting



to get the high quality wrinkle finish on cameras and projectors

Projector covers rotate as the conveyor makes a loop around the ceiling-mounted Ransburg No. 2 Process reciprocating disk. Electro-Spray is providing large paint savings on this wrinkle application, and permits Keystone to meet increased production requirements.

Keystone Camera Company, Inc. adheres to a strict quality control program—from start to finish—in the production of their widely-distributed, high quality home movie products. That's one reason for using the Ransburg No. 2 Process to apply a uniform wrinkle finish on their cameras and projectors.

IMPROVED QUALITY AND LARGE PAINT SAVINGS TOO

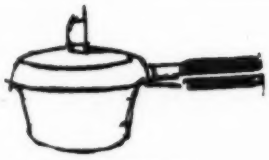
Together with the improved quality and greater uniformity in their finish, Keystone reports large paint savings over former air hand spray. Rejects which used to run 7%, or more, are reduced to less than 1%. Too, Ransburg No. 2 Process has enabled their finishing department—often a bottleneck in production—to meet steadily increasing production requirements without resorting to expensive overtime. Now, with the automatic No. 2 Process, they can turn out more projector covers in an hour than one operator formerly painted in a day. And, assembled cameras are painted five times faster with Electro-Spray. As a result of these desirable advantages—coupled with even higher production schedules—another Ransburg No. 2 Process unit was authorized for a second, identical production line at Keystone.

NO REASON WHY YOU CAN'T DO IT, TOO

Let us show you how Ransburg No. 2 Process can improve the quality of YOUR painted products, and at the same time, cut YOUR paint and labor costs. Send for our No. 2 Process brochure. Or, if your production doesn't justify automatic painting, let us tell you about the No. 2 Process Electrostatic Hand Gun which can be used in either conveyorized or non-conveyorized painting.

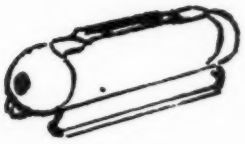
RANSBURG Electro-Coating Corp.
Box 23122, Indianapolis 23, Indiana

METAL FURNITURE



PRESSURE COOKERS

WAFFLE IRONS



VACUUM CLEANERS

DEHUMIDIFIERS

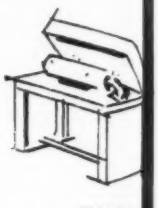
FLOOR POLISHERS

MACCO BLU-COAT

AIR CONDITIONERS

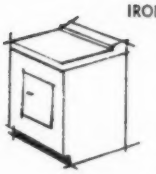
KITCHEN CABINETS

WATER COOLERS



IRONERS

BARBECUERS



CLOTHES DRYERS

the one

PRACTICAL, ECONOMICAL

water soluble

RUST PREVENTIVE

that lends itself to so many applications

STEEL • CAST IRON • FORGINGS • DIE CASTINGS

BLENDERS

ROASTERS

PREVENTS RUST between production operations and assembly...during transportation and storage. Facts and costs from your Macco man are yours for the asking!

FANS

CLOCKS

MACCO BLU-COAT

is applied easily in spray washers or dip tanks . . . another of the many reasons why

THE METALWORKING INDUSTRY LOOKS TO MACCO FOR LEADERSHIP

MACCO PRODUCTS COMPANY

9234 S. SANGAMON ST., CHICAGO 20, ILLINOIS
PRESCOTT 9-0800

New literature

→ *from Page 81*

above and beneath, either or both, continuous or skip spray.

For your copy of the brochure describing the Model RM2G, write Dept. MPM, Conforming Matrix Corp., 434 Toledo Factories Building, Toledo 2, Ohio.

Automatic Electrical Contact Assembly Machines

A 4-page brochure showing a few of the thousands of precious metal electrical contact designs engineered by this firm is available. Cost savings and product improvements are achieved through exact compliance with customer requirements, consistent metallurgical properties, precise electrical characteristics, and proven contact assembly methods.

Automatic electrical contact assembly machines are said to increase production. reduce assembly cost, and assure precision assemblies.

Write Dept. MPM, Judson L. Thomson Mfg. Co., Waltham 54, Mass.

Electronic Instruments for Measuring Press Loads

Two electronic precision instruments designed to safeguard dies and presses during production runs are described and illustrated in a new product report just issued.

Complete information is given on: 1) *Load Monitor*, which continuously registers all press loads on a given press and, by means of a tripping circuit, disengages the clutch to prevent overload repeats. 2) *Tonmeter*, a portable, battery-powered instrument designed to be moved from press to press for measuring the load imposed.

For information on how to obtain Product Report No. 2, write to Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.

Anti-Scoring Lubricant Brochure

A 4-page brochure is available describing CMD extreme pressure anti-scoring lubricant, a highly effective lube oil for extreme pressure in machine tool and other manufacturing processes. The brochure indicates that CMD Extreme Pressure Lubricant will withstand 20 tons pressure per square inch without break-down, preventing metal-to-metal contact and consequent scoring, galling, etc.

Uses of the product are described for

to Page 91 →

We're talking about the use of Pre Finish Metals.

A fabricator of metal products eliminates many production and design limitations through the use of Pre Finish Metals. Pre Finish Metals, Incorporated provides organosol, plastisol, epoxy, vinyl, acrylic or alkyd base finishes.

Laminate films such as DuPont Teslar,* wood grains, printed and embossed finishes are available in any of the above coatings - or on any metal.

You can roll, form, draw, punch or stamp without marring the finish.

Pre Finish Metals, Incorporated provides the widest coated flat sheet in the industry - 18" to 60" widths.

There is a new era in the fabricated metals field and Pre Finish Metals is part of it.

*Dupont's trademark for it's PVF Film

PRE FINISH METALS
INCORPORATED
COATERS OF CONTINUOUS COIL

Formerly: All Weather Steel Products, Incorporated
2111 East Pratt Boulevard • Elk Grove Village, Illinois
Chicago Phone: NAtional 5-9330

4 YEAR SUCCESS STORY!

Here's What the Tyler, Texas Plant of General Electric reports:

"Damage claims are no longer a headache to management. We have used a Chicago Mill designed box for our air conditioners now for four years and have reduced a major customer complaint to an absolute minimum.

This has been one of our more successful cost reductions in the past few years."

GENERAL ELECTRIC

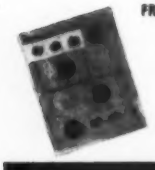
COMPANY

Air Conditioning Dept. Tyler, Texas

A. Allen, *Purchasing Agent*

Why Not Cut Down Damage Claims by Shipping in CHICAGO MILL Containers?

LARGE OR SMALL — CHICAGO MILL MAKES 'EM ALL!
A COMPLETE LINE OF CONTAINERS FOR EVERY SHIPPING PURPOSE!



FREE! Illustrated Catalog Describing Chicago Mill's Shipping Containers and Services!

PALLET BOXES — Wire Bound

PALLET BOXES — Hinged Corner

Cleated Boxes

E-Z Pak Cleated Corrugated (Watkins type)

Wirebound Crates

Wirebound Boxes

Corrugated

Hinged Corner Crates or Boxes

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- TALLULAH, LOUISIANA

safe transit

editorial voice of the national safe transit program

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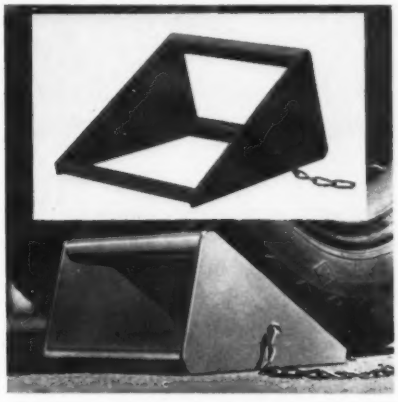
DANA CHASE PUBLICATIONS, INC.

Devoted to improving packaging shipping, and materials handling methods for the appliance and metal products manufacturing industries. This section contains information on plant experience and industry advances for improving packaging and shipping methods, and prevention of in-transit loss. It also contains information on the National Safe Transit Committee's preshipmet testing program and reports on NST activities.

New-Type Wheel Block

The T-Chock is a new type wheel block developed to improve safety conditions at truck loading docks. The chock, of welded steel construction, is designed to give maximum structural



strength coupled with light weight for ease of handling. The open face compensates for various size truck tires. It is reversible, and has a pinch bar locking action which prevents trucks from leaving the dock while the chock is in position. The chocks can be furnished with a 15-foot length of chain to prevent misplacement when they are assigned to a truck loading dock.

Write Timbers and Associates, P. O. Box 4105, 23680 Lakeland Blvd., Cleveland 23, Ohio.

New Technical Director Joins Packaging Institute

James W. Field, formerly with Technical Association of the Pulp and Paper Industry, has joined the staff of the Packaging Institute. He will be the Institute's technical and field service director, supervising the accelerated programs in all areas of the Institute's national technical activities.

Rubber Covered Industrial Access Doors For Lift Trucks

Access doors for industrial plants, completely rubber armored to withstand the shock impact of fork lift trucks as they pass through, are now available from the American Hard Rubber Co., Division of Amerace Corp., Butler, N. J.

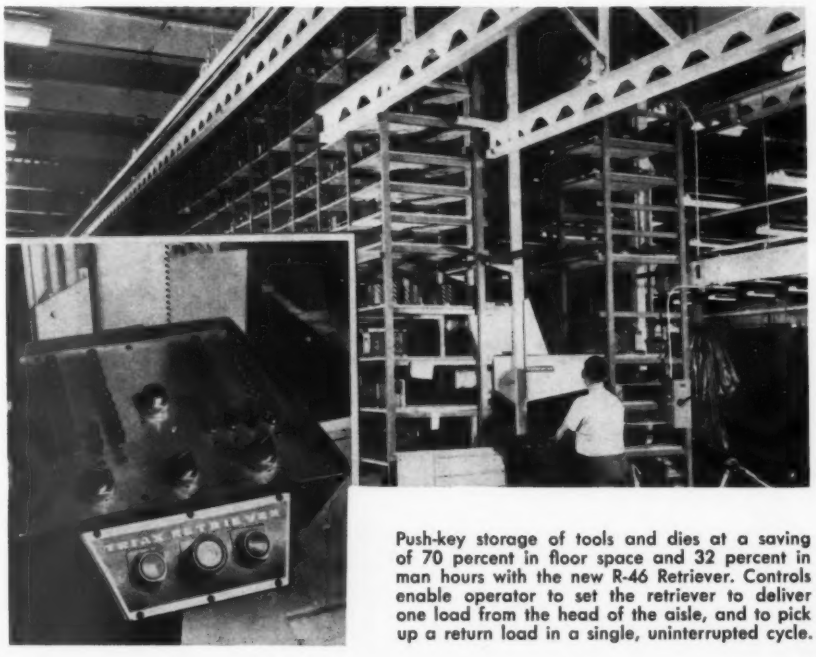
The doors, called Ace Durador, have a core of fiberglass which is said to be

tough, light and non-warping. The door edge is protected by soft rubber, ¾-inch thick, making the closure draft-tight and split-proof. The doors come fitted with windows of shatter-proof, clear Lucite.

Retriever System Has Dual Command Control

Dual command control with a memory circuit to provide for faster, more efficient push-key storage and handling of heavy random loads is featured in a new standardized model of the Retriever system introduced by The Triax Co., Cleveland, Ohio.

The first installation of the new R-46 Retriever is at the New Philadelphia (Ohio) plant of Warner & Swasey, and is used to store jigs, fixtures and special cutters. This installation consists of a single Retriever unit operating in a single 78-foot aisle with floor-to-ceiling storage positions arranged 16 feet high on each side of the aisle. The installation is the first with dual command, or memory, circuits. The controls enable the operator to set the Retriever to deliver one load from the head of the aisle, and to pick up a different load and return with it in a single, uninterrupted cycle. Selective loading is used so that the more frequently used tooling is kept to the front to minimize travel time.



Push-key storage of tools and dies at a saving of 70 percent in floor space and 32 percent in man hours with the new R-46 Retriever. Controls enable operator to set the retriever to deliver one load from the head of the aisle, and to pick up a return load in a single, uninterrupted cycle.

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METAL CLEANING, DRYING, PAINT SPRAYING, DIPPING, FLOW COATING, PAINT CURING, ENAMEL FIRING AND BURN-OFF PROCESSES

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COMING FEATURES

GENERAL

★ SPECIAL REPORT ON A. O. SMITH PERMAGLAS DIV. (HOME AND COMMERCIAL APPLIANCES) ★

★ 1960 STATISTICAL REVIEW FOR APPLIANCES AND FABRICATED METAL PRODUCTS ★

STANDARDIZATION IN APPLIANCE DESIGN

OPERATION OF A 12-PLANT QUALITY CONTROL SYSTEM

A STREAMLINED APPLIANCE SERVICE PARTS CENTER

TYPEWRITER PRODUCTION IN A MODERN MISSOURI PLANT

DESIGN

NEW CONCEPT IN DISHWASHER DESIGN

DESIGN FEATURES OF MIRRO-MATIC PRESSURE COOKER

ADDITION TO MAYTAG LINE: THE GAS COMBO

A GAS RANGE DESIGN FOR '61

FABRICATION

FABRICATING AIRLINER COOKING EQUIPMENT

METAL-TO-METAL ADHESIVES IN HOME LAUNDRY MANUFACTURING

FABRICATING VINYL-CLAD STEEL FOR KITCHEN CABINETS

FINISHING

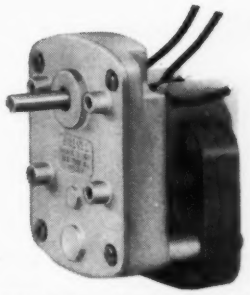
NEW STRIP COATING LINE FOR STEEL AND ALUMINUM

A SURVEY OF THERMOSETTING ACRYLIC PAINTS

GLASS LINING TECHNIQUES AT A. O. SMITH

STRAIN GAUGES FOR EVALUATING STRESSES IN PORCELAIN ENAMELED PRODUCTS

BREVEL



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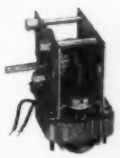
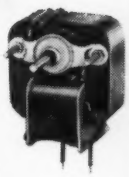
every day Brevel meets unusual specifications for small motor applications

Series S Open Spur Gear Motors





Series W Open Worm Gear Motor

Shaded pole motor—use alone or as backbone for geared motor.

Your new appliances get into production—and to market—faster, at lower cost when BREVEL supplies your motors. Chances are we have a suitable design!

You can rely on BREVEL's experienced specialization to design, engineer, and volume-produce precision motors that give consistently superior service at low cost.

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TORONTO: Brevel Products, Ltd. • 45 Crockford Blvd. • Scarborough, Ont. • PLymouth 7-5140
MEXICO CITY: Arturo A. Aguilar • INdependencia 59-202 • Mexico 1, D.F.

METAL PRODUCTS STATISTICS

		1960 (Units)	1959 (Units)	% Change
Gas Furnaces	Oct.	96,400	127,200	-24.2
	Jan.-Oct.	767,000	900,800	-14.9
Gas Boilers	Oct.	19,178	19,934	- 3.8
	Jan.-Oct.	124,178	128,023	- 3.0
Gas Conversion Burners	Oct.	19,900	25,300	-21.3
	Jan.-Oct.	116,100	134,600	-13.7
Oil-Fired Central Heating Equipment	Sept.	47,473	66,868	-29.0
	Jan.-Sept.	392,853	438,334	-10.4
Gas Ranges, Free-Standing	Oct.	139,000	159,800	-13.0
	Jan.-Oct.	1,261,400	1,404,500	-10.2
Gas Ranges, Built-In	Oct.	30,800	34,700	-11.2
	Jan.-Oct.	290,900	290,100	+ 0.3
Gas Water Heaters	Oct.	192,900	274,200	-29.6
	Jan.-Oct.	2,308,300	2,561,600	- 9.9
Gas Vented Recessed Wall Heaters	Oct.	43,600	53,000	-17.7
	Jan.-Oct.	305,300	371,500	-17.8
Gas Floor Furnaces	Oct.	13,800	16,000	-13.8
	Jan.-Oct.	75,700	85,600	-11.6
Gas Direct Heating Equipment	Oct.	159,500	220,400	-27.6
	Jan.-Oct.	1,003,800	1,218,200	-17.6
Gas Unit Heaters & Duct Furnaces	Oct.	20,400	20,900	- 2.4
	Jan.-Oct.	132,100	127,300	+ 3.8
Gas Incinerators	Oct.	3,400	5,100	-33.3
	Jan.-Oct.	36,300	37,400	- 2.9
Electric Household Refrigerators	Oct.	244,200	329,600	-25.3
	Jan.-Oct.	2,899,700	3,236,500	-10.4
Electric Farm & Home Freezers	Oct.	68,500	89,600	-23.7
	Jan.-Oct.	944,200	1,077,300	-12.4
Electric Ranges, Free-Standing	Oct.	75,600	74,200	+ 1.8
	Jan.-Oct.	714,300	781,500	- 8.7
Electric Ranges, Built-In	Oct.	52,300	69,200	-24.4
	Jan.-Oct.	564,800	613,800	- 7.9
Electric Water Heaters	Oct.	49,200	65,100	-24.4
	Jan.-Oct.	567,000	708,000	-19.9
Electric Dishwashers	Oct.	41,600	50,600	-17.7
	Jan.-Oct.	462,100	424,500	+ 8.9
Electric Food Waste Disposers	Oct.	60,200	83,200	-27.6
	Jan.-Oct.	615,400	643,800	- 4.4
Combination Washer-Dryers	Oct.	13,062	24,598	-47.0
	Jan.-Oct.	131,957	165,352	-20.0
Washers—Automatic & Semi	Oct.	247,338	282,415	-12.0
	Jan.-Oct.	2,160,642	2,475,487	-13.0
Washers—Wringer & All Other	Oct.	58,470	91,720	-36.0
	Jan.-Oct.	614,737	780,857	-21.0
Electric Dryers	Oct.	94,399	110,834	-15.0
	Jan.-Oct.	632,799	719,877	-12.0
Gas Dryers	Oct.	57,522	68,835	-16.0
	Jan.-Oct.	344,946	370,218	- 7.0
Vacuum Cleaners	Oct.	290,059	330,899	-12.3
	Jan.-Oct.	2,778,045	2,836,882	- 2.1
Metal Furniture	Jan.-Oct.	*	*	- 8.0
†Television	July	283,475	*	*
	Jan.-July	3,491,336	3,334,540	+ 4.5
†Radio (1)	July	890,359	*	*
	Jan.-July	9,414,879	7,936,621	+15.6
Typewriters	Oct.	116,234	*	*
	Jan.-Oct.	983,517	*	*(a)
Compressor Bodies (2)	Jan.-Dec.		4,926,657	+37.0
Steel Barrels & Drums	Sept.	2,648,289	2,262,451	+14.6
	Jan.-Sept.	23,177,992	26,005,655	-11.1
Room Air Conditioners	Oct.	45,400	65,700	-30.9
	Jan.-Oct.	1,372,500	1,302,100	+ 5.1
Unitary Air Conditioners (3)	Jan.-June	185,474	*	+15.0
Heat Pumps	Jan.-June	19,845	*	+25.0

(1) Including auto receivers (2) Except for household refrigerators
(3) Including heat pumps (a) Increase over 1958
* Not reported † Output — all other figures are factory shipments or factory sales

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

Editor's mail

→ *from Page 54*

first page of the story, and in the copyright line which will appear on the bottom of the page.

May we please have two copies of this article?

Harold Sabes
Executive Review
Chicago, Ill.

Product service and reliability

Gentlemen: I am very interested in receiving pamphlets covering the topics for the Western Appliance Technical Conference which was sponsored by the American Institute of Electrical Engineers. There are only two pamphlets that I would like to obtain and they are: "The Role of the Product Service Department in Product Design," by H. R. Clark, manager, customer service, Waste King Corp.; and "The Relationship of Product Reliability to the Product's Market."

This information appeared in the October, 1960 issue of METAL PRODUCTS MANUFACTURING, page 86.

Any information you can give me concerning the above topics will be very much appreciated.

G. V. Long, Manager, Radio Service
Television-Radio Div.
Westinghouse Electric Corp.
Metuchen, N. J.

The American Institute of Electrical Engineers is located at 33 W. 39th St., New York 18, N.Y.
The Editors

600 + 5400 = 6000

In the December issue of MPM, page 26, it was erroneously reported in the subhead that attendance at the 14th annual convention-exhibit of the National Automatic Merchandising Association numbered 600. In the body of the article, however, attendance was reported as 6000. The latter is correct, and MPM apologizes to the 5400 conventioneers who were slighted.

The Finish Line

Gentlemen: Please send to my attention a copy of the article The Finish Line which appeared in the May, 1960 issue of METAL PRODUCTS MANUFACTURING.

R. C. Hartman, Materials Engineer
Airtemp Div., Chrysler Corp.
Dayton, Ohio

The editorial Mr. Hartman refers to concerned the problem of air conditioner corrosion in sea coast areas.
The Editors

For distribution to management

Gentlemen: I would like to get four copies of your MPM Volume 17, No. 11, November, 1960 magazine for distribution to our management group.

Will you please forward these to my attention.

T. C. Ray, Manager
Purchasing Department
Inland Steel Products Co.
Milwaukee, Wis.

NEMA

→ *from Page 29*

can home laundry appliance industry.

"Our finance and budget committee has reviewed NEMA's method of billing members and has recommended a revision to bring estimated billing at the first of the year more closely in line with eventual re-allocation and re-apportionment.

"The finance and budget committee also is studying the advisability of developing financial and operating ratios for the division itself."

Travis concluded by saying, "These are only the more important accomplishments. The sections of the division and their member companies are working well together. The division structure is proving its value."

New officers

The newly elected NEMA officers are: president — A. D. R. Fraser, president, Rome Cable Div., Aluminum Company of America, Rome, N. Y.; vice president — W. R. Persons, president, The Emerson Electric Mfg. Co., St. Louis, Mo.; and treasurer — A. E. Pringle II, president, The Pringle Electrical Mfg. Co., Philadelphia, Pa.

Service awards

Three men were honored by NEMA by presentation of awards "in recognition of outstanding personal contributions to the progress of the electrical industry." N. J. MacDonald, president, The Thomas and Betts Co. and immediate past president of NEMA, received the Medal for Cooperation, in recognition of his personal initiative and leadership in bringing about the concept of "interdependence" in the electrical industry.

James Finney Lincoln, chairman of the board of The Lincoln Electric Co., received the Manufacturers Medal for his "outstanding leadership and inspiration in the creation and development of the electric arc welding process." Everett Morss, president, Simplex Wire and Cable Co., received the Manufacturers Medal for "initiative and dedicated industry leadership in the development of modern synthetic insulation for electrical conductors to the great benefit of the electrical industry."

50-year certificates

In addition, two leaders in the electrical manufacturing industry were presented the industry's 50-year certificates. The certificates were presented by N. J. MacDonald to A. M. Callanan, director and consultant of Walker Brothers, Conshohocken, Pa.; and Fred F. Loock, president of Allen-Bradley Co., Milwaukee, Wis., in recognition of their respective half centuries of continuous service in the electrical industry.

The electrical industry will spend $4 billion for research and development work this year — reportedly more than all of the rest of the nation's industries combined — and results in terms of "profitable new products" amply justify the investment according to industry spokesmen. Following these opening comments, four of the electrical manufacturing industry's top scientists reviewed several rare accomplishments in the fields of communication and control, power generation, and lighting and structures.

Top scientists who reviewed rare accomplishments in the fields of communication and control, power generation, and lighting and structures are (from left): Dr. Herbert Trotter, Jr., president, General Telephone and Electronics Lab., General Telephone and Electronics Corp.; Dr. Finn J. Larsen, vice president in charge of research, Minneapolis-Honeywell Regulator Co.; Dr. Walter R. Hibbard, Jr., manager, metallurgy and ceramics, research dept., General Electric Research Lab., General Electric Co.; and Dr. S. W. Herwald, vice president, research, Westinghouse Research Lab., Westinghouse Electric Corp.

The scientists were Dr. S. W. Herwald, vice president-research, Research Laboratories, Westinghouse Electric Corp.; Dr. Walter R. Hibbard, Jr., manager of metallurgy and ceramics, Research Department, General Electric Research Laboratory; Dr. Herbert Trotter, Jr., president, General Telephone and Electronics Laboratories; and Dr. Finn J. Larsen, vice president in charge of research, Minneapolis-Honeywell Regulator Co.——MPM

New literature

→ *from Page 85*

lubrication in such operations or equipment as lathe centers, steady rests, thrust bearings, broaching, extruding, swaging, die-set posts, cams, machine ways, tapping, etc.

For your copy, write to Dept. MPM, Chicago Mfg. & Distributing Co., 1900-Z W. 46th St., Chicago 9, Ill.

Stock Dies for Aluminum

A 40-page catalog lists 700 stock dies for aluminum extruded shapes, rods and bars. In addition to the items cataloged, the company has 500 stock dies "to help make aluminum serve its multitude of mechanical and decorative purposes." For a copy of the catalog write Dept. MPM, General Extrusions, Inc., Youngstown, Ohio.

Nameplate Directory

To assist purchasing agents, engineers and designers in specifying and purchasing the correct types of decal transfers for specialized applications, this firm now offers its new "Directory to Quality Transfer Nameplates." The directory explains the difference between various types of decal transfers, and also details the newly developed nameplates for dry pressure-sensitive application. A complete section is devoted to the firm's heat resistant line.

Write Dept. MPM, The Meyercord Co., 5323 W. Lake St., Chicago 44, Ill.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

THE A. O. SMITH APPLIANCE STORY

an MPM special report on HOME AND COMMERCIAL APPLIANCE PRODUCTION at the A. O. Smith Permaglas Division . . .

COMING IN FEBRUARY

FABRICATION, FINISHING, ASSEMBLY, QUALITY CONTROL AND PACKAGING at one of the nation's leading appliance manufacturers (5 millionth water heater built in late 1959) will be covered in story and pictures in the February 1961 issue of MPM.

AN MPM SPECIAL REPORT

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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PEI forum

→ *from Page 41*

"New applications . . ."

W. E. Pierce of PEI discussed progress made by the porcelain enameling industry in opening up new markets and pointed out other areas which offer markets to the industry.

Referring to automobile mufflers, Pierce recalled that at the 1959 Forum he reported that the only problem blocking the acceptance of porcelain enameled mufflers was the difficulty of obtaining 100 percent coverage of the parts.

Today, he went on, there are at least 11 porcelain enameling companies who have solved this problem through cooperation with frit and muffler manufacturers.

Other fields which are "ripe" for porcelain enamel, Pierce noted, are truck and farm equipment mufflers, spray cans for corrosive solutions, and farm stock watering devices. In addition, he said, the sign industry still offers "great possibilities."

One very recent application for porcelain enamel, Pierce said, is as an adhesive material for bonding two different metals.

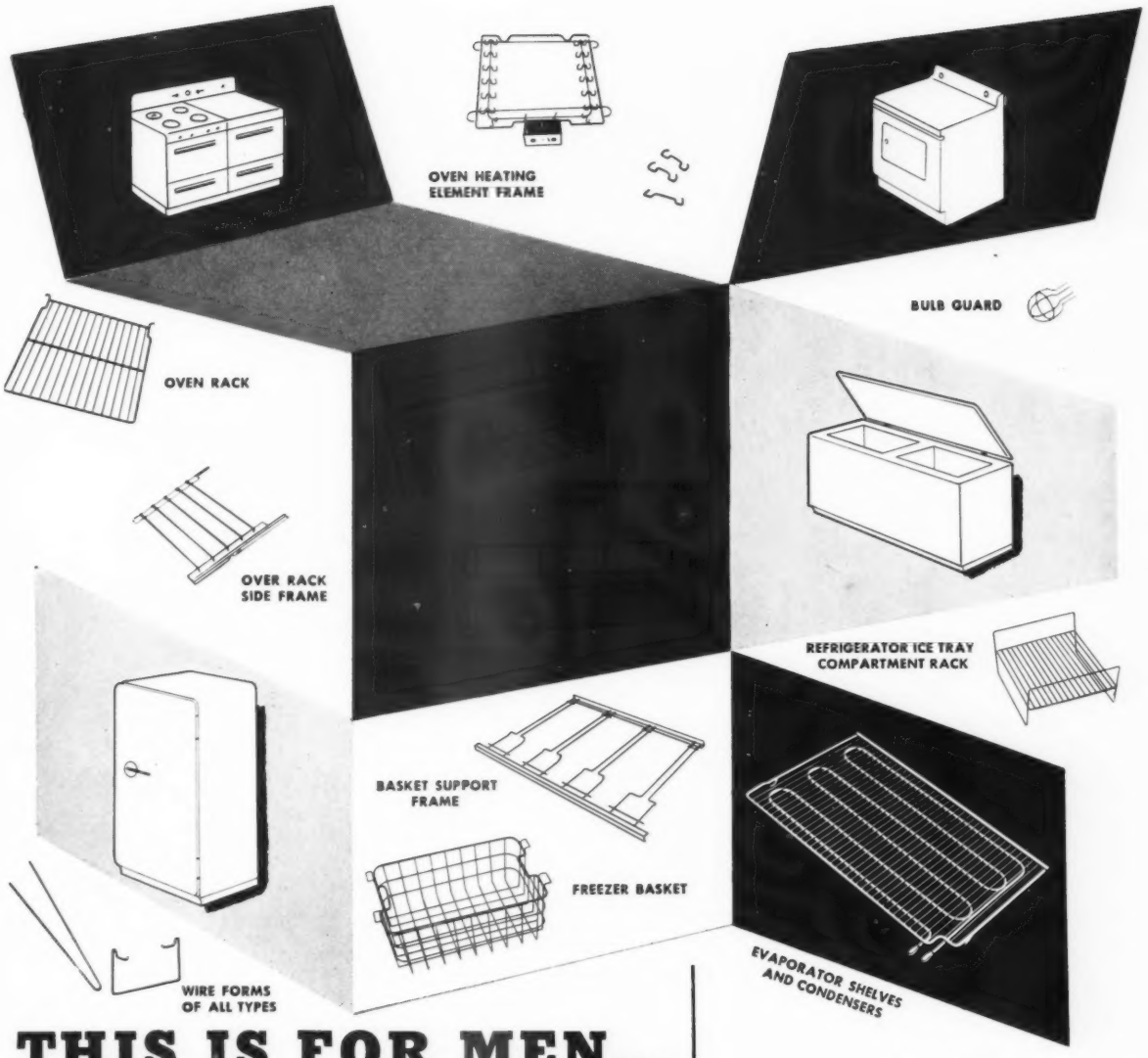
Infra-red furnace

→ *from Page 56*

four control units, one to a recording pyrometer, and three feeding into an indicating pyrometer. (It is simple to switch to any of the three zones — one, two, and four — to check zone temperature.) The third (critical zone) is controlled to ± two or three degrees of thermocouple temperature.

In commenting on the present furnace installation for porcelain enameling aluminum, Paul Kates, ceramic engineer, California Metal Enameling, had this to say to an MPM reporter: "Although we have spent two years of concentrated development work in connection with the evolution of our present furnace for aluminum enameling, we would certainly not point to the result as the ultimate in furnaces. We have proved to our own satisfaction the practicability of curing porcelain enamel with this type of infra-red heat source, and we have found the fast heat-up and fast cool-down to be very desirable. Nevertheless we feel that there is more work to be done.

"It is entirely possible that the ultimate in furnace design for this purpose may be a combination of infra-red of the type we are using, with a short convection heating zone for final firing."



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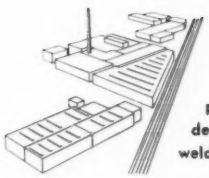
Why not improve your appliance and eliminate production problems by selecting the one manufacturer who has specialized in producing quality welded wire products for half a century. Specify Union Steel...the *experienced* source that guarantees higher quality—plus on time delivery.

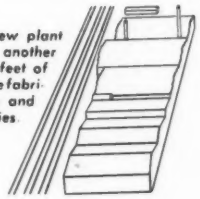
Need help? Union Steel's engineers will gladly assist you in planning and producing a welded wire part or assembly that will make your product more efficient.

Why not start by phoning Union Steel today?



385,000 square feet of modern plant facilities devoted to contract welded wire fabrication

USP EXPANDS AGAIN... TO SERVE YOU BETTER *



* *Union Steel's new plant which provides another 84,000 square feet of specialized wire fabricating, plating and shipping facilities.*

UNION STEEL PRODUCTS CO. ALBION, MICHIGAN

WIRE PRODUCTS DIVISION

D-3 Dishwasher Rinse Additive Dispenser

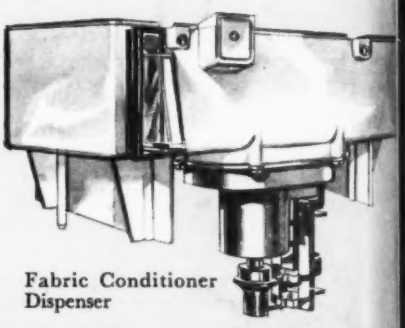
D-4 Clotheswasher Dispenser

HOW TO INJECT SELL INTO YOUR PRODUCT... ADD **DOLE** APPLIANCE DISPENSER CONTROLS

It's the *exclusive* features you design into your product that clinch the sale for *your* appliance over all others. One of the simplest, yet most exciting, components you can add is a Dole additive dispenser. Exciting, because you're providing the sales group with a dramatic and functional built-in or add-on that gives them a competitive edge. Simple, because you can turn the entire design project over to Dole's complete staff of experienced control application engineers for a practical, saleable solution.

Dole engineers will implement your basic ideas while the design is still on the drawing board, will provide a functional solution to your problem—a complete system, or essential components—and will come up with a prototype that will meet the most exacting specifications for quality. Then, Dole's manufacturing know-how will produce your custom-designed product exclusive in mass quantity while maintaining pilot model standards.

Whether your design calls for single or multiple product dispensing Dole has the answer. So, to inject *Sell* into your product why not explore the areas of automatic control with Dole. Your Dole field engineer can give you all the advantages of controlled dispensing, flow-rate, mixing, ignition, shut-off, and temperature as the most practical, least complicated means of improving your product's saleability. Ask him about it when he makes his regular call or write direct.



Fabric Conditioner Dispenser

Control with

DOLE

Appliance Controls Sales Department

THE DOLE VALVE COMPANY

6201 Oakton St., Morton Grove, Illinois

The Dole Valve Company of Canada, Ltd.

1490 Speers Road, Oakville, Ontario

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